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EDITORIAL.

THE EQUALIZATION OF PHYSICAL AND MENTAL EDUCATION.

The realization of the good that would accrue to mankind from an education based on the very sane idea of a step by step development, as regards both mind and body, is not of so recent date that anything approaching undue excitement need affect us. As far back as the earliest centuries of our era, there was much said and written on the subject of a simultaneous physical and intellectual education; and the term "Galenism," derived from the Greek physician's work, "De Usu Partium Corporis Humani," was at that time something to conjure with, and even retained until the eighteenth century enough glamor to give sustenance to the weakening efforts of the partisans of a wise creed. But with the advent of the eighteenth century, it was not long before it fell to a disgracefully low estate, before the sweep of an onslaught from opponents who derived no inconsiderable strength from the frenzied enthusiasm for intellectual adornment which pervaded the best ranks of society. A hiatus in respect of a physical development of equal proportions with what was thought a normal mental evolution, persisted nigh unto one hundred years; and though to-day some regret might be expressed for a neglect that certainly was detrimental to the physical prowess of nations, we yet cannot abstain from a congratulatory mood, when studying the forced educational conditions of this epoch-making period in history. For if the concentration which was lavished on the mind had been directed into the channel of physical culture, few would have been able to withstand the strain; and a multitude of physical wrecks would have fathered a generation, whose physical defects would have been so great that, even after the lapse of many years, there would have been a lower physical status among their descendants, than was evidenced by the discouraging signs which smote the intelligence of such men as Johann Heinrich Pestalozzi and Peter Henrik Ling at the beginning of the nineteenth century.

Truth to say, the heritage which is ours to view alternately with slight hope or deep commiseration, is discouraging enough at times to awaken a deep interest in this vital subject; nevertheless, it would be wrong to hark back to preceding centuries to lessen the blame which now rests upon us; for though, as we have already remarked, the eighteenth century made light of the development of the body, the nineteenth,—despite the red-letter days, on account of the labors of the aforementioned two men who brought home to the various peoples of receptive intelligence the great news of the need of greater education of the body,—has really but few encouraging lessons to offer, to illustrate that even when many shafts are driven home, human intelligence is eager to rectify what was left undone in the past. Despite this laxity of duty, so inimical to the desired improvement in the human race, the present century cannot be thought a like laggard; for to judge only by what some of the foreign literary* and medical** journals are printing, the matter of physical education has taken a new lease of life, with all the indications of an agitation that will bear fruit. Nevertheless, we should be wary as to favorable predictions, since every century, in its infancy, makes much of enthusiasm in connection with all sorts of problems, only to become lukewarm as its judgment grows more sedate and its voice less penetrating by reason of a passive maturity. Even the last century started out in the first decade with clear and somewhat shrill sounds, to the effect that Peter Henrik Ling was the greatest advocator of the advantages of the close alliance between body and mind; though, in no jesting sense, it may be stated, that towards its close the sounds had dwindled into a whisper, and physical decadence, if not in Sweden, at least throughout the rest of the world, went merrily on to its furthest goal.

While every movement that has the betterment of the human race for its object, is sure to attract the wild-eyed enthusiasts who by a strenuousness most deplorable do it more harm than good, there is in this instance such ample room for the widest play of a calm and measured sanity, that no fear need be entertained that the aforesaid enthusiasts will outnumber the moderates. Whether or not frenetic partisans are to blame, the fact remains that there are many pages in the history of the human family, which show that physical development has been thought, if not a negligible quantity, at least one of secondary importance. To raise it upon the pedestal which to-day supports only the mind, thus making it of equal worth and value,—and, be it said, of no detriment to any of the mental graces,—is the hope of the believers in the advantages

*The Eternal Union. *London Outlook*, May 8th, 1909.

**De L'Education Physique. Par le général Fr. Canonge, Docteur en médecine. *Gazette des Hôpitaux*, July 13th, 27th, Aug. 12th, 17th, 19th, and Sept. 2nd, 1909.

of a proper physical development; for out of the combination must arise a better illustration of manhood than obtains to-day. It may be well for the ignorant to decry the Greeks for their over-indulgence in outdoor sports, and charge them with neglect of the proper cultivation of their mental faculties; but the student, who has drunk deep of the history of these people, at the time of which we speak, knows better than to bring against them so ridiculous an indictment. We cite this instance in history, because too many educators are prone to see, in physical exercises, a temptation on the part of the student to develop them at the expense of the mind. To all right-thinking physicians this must appear, even at first sight, as a contention that has small worth; for to them it is a matter of great moment that the body should reap benefits similar to those hitherto enjoyed only by the mind. It has been suggested in certain quarters that too great an indulgence in the development of the physique may defeat, on account of a weakening of the physical powers, the object in view; and though this does happen where the desire for improvement deteriorates into an insensate ambition, the instances are not so numerous that obstacles should be placed in the only avenue that leads to health. A mind, no matter how high a degree of culture it has attained, cannot be a healthy one if it lacks the stamina which come to it from a close association with a healthy body.

There is one phase, however, of this vital question, which is open to contention. When are we in the right condition to benefit by exercise? and are tired nerves best restored to their virile state by rest instead of exercise? Professor Münsterberg* has recently inveighed against all exercise for the American people, on the ground that we are, so to speak, a bundle of nerves, and that complete rest should be the tenet of our lives, instead of exercise which he orders for a hardier race of men. The inference to be drawn from his article is that while other nations have the anatomical nerves, we have the pathological ones; and that, if we continue in our careless and thoughtless ways, pathology will make sad havoc of us before long, what with the added folly of all those new-fangled ideas of physical education, which some American educators are promulgating for the benefit of the child and the adolescent.

Having studied our social and physical conditions through German spectacles, and being possessed of Teutonic nicety when the critical spirit seizes him, we cannot but hearken to Professor Münsterberg's writing on the wall; but even though we do admit, after much wrangling, that our nerves are not of the healthiest, we are not justified in belittling the great advantages arising from a physical education. For if our nerves are as unhealthy as he asseverates, there must be a very good reason for

*"Nerves." *Metropolitan Magazine* for August.

this untoward state; and despite our business propensities—a bugbear which always looms exaggeratedly large before a foreigner's eyes, and is invariably held accountable for our physical degeneracy—a saner conception of what education in its broadest sense should stand for, would do much to combat all the inroads of devastation, which are now supposed to beset us when we enter into the thick of the fight for existence. Solicitude for the growing child as regards the proper physical basis, so that in later years there shall be a bulwark of resistance to counteract the buffets incidental to modern life, would soon show that the articles, which iterate the grave mistakes of our corybantic endeavors in the business world, are misleading, since they merely skim the surface of a condition that is faulty because, too long, there has been a divorcement between the intellectual and physical in our life of to-day.

AS TO THE DIAGNOSIS OF GENIUS.

The most perplexing problem which continually assails the modern mind is the one which has, among its many baffling characteristics, the tantalizing intricacy that muddles many an unbiased critic, when attempting to differentiate between genius and the lesser mental qualities so rampant among those whose lives are dedicated to conventions. In its attitude to this vastly interesting subject the medical mind, of all minds, is prone to make short shrift of the matter, by relegating all exceptional men to the vast cauldron kept continually a-glow and a-seething by the tender mercies of the neurologists imbued with the vagarious teachings of Moreau de Tours, Lombroso, and Grasset. That among the small army of the gifted there are those who, in connection with their talents, manifest obsessions and phobias, is a fact builded on solid rock; but since medical tendencies, nowadays, are only too readily affected by misplaced enthusiasms which lead to exaggeration—is not inclusion instead of exclusion their dominant note?—it would seem to some of us that the time is not inopportune to call a halt on whimsical diagnoses of a mental state that surely cannot always be explained on the grounds of semi-insanity and semi-responsibility. This attitude of ours may, at first sight, savor somewhat of the deplorable impenetrability that always accompanies scientific narrow-mindedness, and make for enough to invite unfavorable criticism; but the calmness of second thought would reverse the opinion, since with it would come to the critic a wider knowledge of what is going on in the world of real and serious thinkers to-day, in con-

nection with what really constitutes genius, and the characteristics whereby a sanely measured recognition may be effected.

A book in point—and one that would make profitable reading for all whose equilibrium has been disjointed by specious theories wrought by overheated medical writers—is Professor Wilhelm Ostwald's "*Grosse Männer*," recently published by the Akademische Verlagsgesellschaft of Leipzig, and wherein are stated so many engaging and convincing facts in regard to a proper diagnosis of genius, that, were one to study it repeatedly in all its minutiae, the time spent would not be wasted, for the compensation, in face of the multitudinous preachments which have hitherto been our undesired portion for cogitation on the sordid and despicable abnormalities of genius, could not be overestimated. Even though Professor Ostwald's contention, which he summarizes somewhat in this fashion—namely, that those students who are inadaptable to methodical teaching are the ones who should enlist our attention, for to them we must look for manifestations of genius—might admit of doubt from those who hold other views in regard to the matter, the truth of his contention would remain intact, since a rebellious intellectual spirit at an early age is indicative of much more than recalcitrance. If genius is a matter of human energetics—and a psychology that knows of the advantages of philosophical tenets will not be loth to admit this—then its best showing is made when its seeds evidence the first sign of sprouting, as a result of the unrestrained enthusiasm peculiar to this mental state abetted by the leaven of youth. As Froude has it, "submissiveness, humility, obedience, produce if uncorrected, in politics a nation of slaves, whose baseness becomes an incentive to tyranny"; and that these strong words would have answered as an excellent text for Professor Ostwald's scientific sermon, after changing the word "politics" to "education," is illustrated by his attitude towards the public schools of Germany and England, and better still, by his citations indicative of the early age at which the following aroused the nations to the appreciation of their genius: Goethe with "*The Sorrows of Werther*," Schiller with his play "*The Robbers*," Newton with his invention of the calculus and his analysis of light, Linnæus with his sexual system of plants, and Berzelius, Versalius, Carnot, Ludwig, Du Bois Reymond, and Kelvin, with their respective work. By these citations, as well as by the original biographies he gives of Davy, Faraday, Julius Robert Mayer, Liebig, Gerhardt, and Helmholtz, he shows how simple a matter it is to diagnose genius; for all these men were continually at war with surrounding conditions, and only by virtue of their respective energetics were they able to combat what would have

been so great a submergence to lesser minds that nothing above conventional acts would be here to record.

Aside from what this scientific exposition must mean to those, in the medical profession, who have been all along avid for a fuller definition of genius than was granted them by the constant reiteration of those abnormalities so dear to the tortuous mind of the neurologist, the lesson to be culled from a careful reading of this book, is one that has the deeper meaning that all writings of exceptional value must have, when their intelligent interpretation is made applicable to the worth and value of persons and things so that a wider appreciation may result. The tendency which we would deprecate among the doctors of to-day—especially among those who have our ear on account of their written word, be it wise or unwise—is their increasing enthusiasm when scenting anything that strikes their very correct way of thinking, as an undesirable opposite to the dry-as-dust and rectilinear mental habit which they pursue in effecting their daily vocations and avocations. Because their mentality is so well trained, and so inured to the belief that what they cannot conceive at once as normal must necessarily be abnormal, we are often unwilling witnesses to-day to a spectacle of farcical proportions when the elusive matter of genius is analyzed. And so widespread is the pose of aloofness and utter disregard of what genius must mean as a factor in the growth of thought to bring about a better civilization, that even the tyros in the medical profession, when but slightly encouraged, languidly express themselves in opprobrious terms—terms which even a dullard has no difficulty in construing into obsessions, delusions and sexual perversions!

All of which goes to show what a Philistine mind the medical is. But it also speaks out plainly of a narrowness of the mental horizon, that cannot be anything but a discredit to what is generally known as the most liberal of all professions. Influences such as these must ere long react on all opinions; and whether the thought applies to a purely medical subject, or to one with which in its idle, but alas! unphilosophical, moments medical science indulges in play, the vestiges, indicative of a stubborn and uncompromising front, are not hard to find. By no stretch of the imagination is this conservatism, for this quality, while quite undemonstrative, weighs with justice the pros and cons of a case. And when conclusions are arrived at, there is enough seriousness manifested to show that the thinking was not altogether on the surface, but had its tendrils deep enough in the brain of the thinker to formulate something that is not marked by the flippancy which nowadays is especially rampant, when the Philistine medical mind is called upon to define so weighty a matter as genius, and hedges by expatiating *ad nauseam* on all the indelicacies with which it hopes to excuse its ignorance of the subject.

PATHOLOGY AND THE ENGLISH LANGUAGE.

We have been quite sure for some time that the many laxities indulged in by our modern writers, when they were hard pressed for new metaphors, and failing to find them were not loth to use the most hackneyed and undignified ones, would ere long call forth a rebuke; but the characterization advanced by one of the editors of the *Lancet* in a recent annotation is much more than a reprimand, for the article sets forth that the usual metaphor employed by writers is really a fine specimen of pathological phraseology. And by modern writers is not meant, altogether, those who merely write to while away a pleasant hour, but also that ever-increasing army of contributors to the medical press, which is so careless of what the reader might think of the construction of its sentences, that most articles are as indigestible to the mind as is badly prepared food to the stomach. It has really become the fashion nowadays to write for the medical press with small regard for the reader's literary proclivities; the idea being that the author's novel experiences, in an unusual case, are sufficient to fasten the reader's attention, irrespective of the literary undress in which his adventures at the bedside are but poorly arrayed. Hence, there should be no surprise on the part of the reader when the incrustations, which should have some semblance of glitter, are nothing but a nerve-racking iteration of worn-out phraseology, pretentious terminology, and metaphors whose good old age makes a decrepit whimper for recognition.

If indignation is our part, upon contemplating how complacently inapt and decayed metaphors are used, what shall be our state when recalling our real tortures, after a submergence into the placid sea of the small number of Latin phrases that are always at the tongue's end of our voluminous medical writers! Who, to-day, we pause to ask, is unacquainted with the ever-recurring, "multum in parvo," "ex pede Herculem," "sine qua non," "quoad hoc," "ex parte"? the French phrases that have done yeoman's service these many years: "cela va sans dire", "apres moi le déluge", and that oft-buried but resurrected Italian phrase which we all regret that Galileo ever used: "E pur si muove"? Surely not the writers for the medical press; for illustrations of their deep knowledge of all these smites us as we open the pages of our weekly publications; and were we sure of our ground, and less appreciative that they are well-intentioned men of honor and probity, we would be tempted to accuse them of being component parts of a syndicate to upset the little peace that is granted us after a day's toil.

Feeling as we do about this matter, and having passed through many agonizing pains because we were fearful the outlook for improvement

was too dark to admit of any ray of light, we are rejoiced to learn that the repetition and age of the many verbal offenses above recorded, really belong to the province of pathology. If this is true, our depression ought at once to vanish, for with our knowledge of what surgery can do when guided by the beacon-light of pathological teachings, there might come a time when a specialist of language-operations will be as dexterous with the knife, as is the surgeon to-day when called upon to eradicate a condition pronounced, beyond the help of medicine or advice, by the clear and unmistakable tones of the pathologist. But until such time, the gnashing of our teeth must continue under the assaults of decayed metaphor and irritating foreign phrases!

The critical attitude assumed by the writer in the *Lancet*, has enough justification to warrant a series of articles on this subject. Of course, the casual reader is not so deeply affected, for he may or may not read an article, consulting his taste and inclination in the matter. But the editor is not so fortunately placed, since the duty devolves on him to read many things; and though it may be contended that time and the mechanical way in which he is wont to perform his duties should render him callous, we regret to say, such is not the case. In fact, instead of growing indifferent, as the years speed by, his sensitiveness increases until a stage is reached when the mere sight of a foreign phrase or trite metaphor which he has seen several hundred times, upsets him for the day. That a hypersensitiveness as regards so trivial a matter—we say trivial because the uncritical are of this opinion—should be the means of so great a disturbance, is really unfortunate, for it creates the sort of narrowness that makes war on all those bits of writing, which have by custom become the literary stock-in-trade of the writer for the medical press. Just how ineffective so great a prejudice is, is evidenced by the construction of the many papers which continue to use the same threadbare metaphors, aged similes, and ricochets across the very shallow pools of falsely-constructed foreign phrases that have unfortunately stood the test of time so well, that superficially thinking writers must needs think they are a necessary part of the English which has the greatest appeal for the reader.

LITERARY NOTES.

The subject of the heredity of cancer is at present a matter of such favorable discussion that certain authors are decidedly taken up with its probability. As a counterblast to this way of thinking we have, in the recent thesis, "Critical Examination of the Arguments in Favor of the Heredity of Cancer," by Dr. Hamonet, which sets forth the ideas ad-

vanced by Dr. Maurice Guillot, Surgeon to the hospitals of Bordeaux, a severe criticism of the theory of heredity when the theory is based only on insufficient data and defective statistics; and also the truism that a persistence in its belief is doing a most grievous wrong to the heroic efforts which are making in our present-day war on the spread of cancer. One of the arguments advanced by Dr. Hamonet against the heredity of cancer is the important fact which is now known in connection with tuberculosis. The idea of tuberculosis being hereditary is decidedly out of date, for the results, as stated even by its most ardent partisans, are not at all gratifying, since the cases where heredity plays the prominent part are very rare. Nevertheless, only a few years back, heredity was considered its most frequent cause, and the statistics, moreover, triumphantly showed that its frequency was two or three times greater than in cancer! Broca was so enamored of this theory that he wrote as follows: "It would be superfluous, in my judgment, to attempt to verify so evident a fact as the frequency of heredity as a cause of tuberculosis. The number of these instances is so great that my father-in-law, Lugol, considers all other cases as exceptional." Hérard and Cornil in their "Treatise on Phthisis Pulmonalis," state with emphasis that "there does not exist in pathology a proposition that is better established than the one of heredity in tuberculosis pulmonalis." In 50 per cent. of their cases they found their theory verified, and if they needed any further support, they got it from the statistics of Barthez, Piorry, Pidoux and Leudet, which read to the effect that heredity was the inciting cause in from 15 to 25 or 50 per cent. of their cases. Could anything be more effective in establishing the heredity of tuberculosis? For long this dogma was too sacred to be attacked, and unanimity of opinion made a perfect picture. But after the experiments of Villemin, and the discoveries of Koch, a break took place in the phalanx of the believers, and an inkling of the fatuity of their assertions was brought home to them. And thus it is with cancer. All argument based on statistics is valueless because these are not invariably alike, since they are only too often faulty as to the recording of age, the country in which they were gathered, and many other important details. But Dr. Guillot has proved, beyond a doubt, that statistics, following certain precise rules laid down by him, establish the fact that neoplastic antecedents are equally divided among the cancerous and non-cancerous. And, finally, Dr. Hamonet asserts that to abet the hypothesis of heredity in cancer is an attitude greatly to be deprecated; for, by showing this sort of spirit, we are really discouraging the sane efforts which all researchers are at present undertaking to combat the most obstinate disease known to medicine.

M. Mignard, commenting upon the theories of MM. Sérieux and Capgras in the *Revue de Psychiatrie*, relative to the delirium of interpretation, —a delirium based on a false reasoning that nevertheless has for the point

of departure a real sensation, an exact fact,—recalls the case of Jean-Jacques Rousseau who presented a remarkable example of this form of psychosis. Hypersensitive and distrustful, Rousseau was undoubtedly predisposed to delirious interpretation. His timidity was extreme, and while he was most exacting as regards the truth, he was also a believer in myths. Rousseau himself insisted on the impetuosity of his temperament and the feebleness of his criticism. His own words run as follows: "Sentiment appeals to me more than do the ideas which might enlighten me; it burns and vanquishes my strength. I *feel* but I do not *perceive*." At the age of forty, as the result of real ennui and genuine attacks of illness, he showed the beginnings of delirium. He imagined that d'Holbach, Voltaire, Grimm, and Hume were plotting against him. Although for the most part their hostility against him was real, that there was any systemization of persecution was an exaggeration that soon became a delusion. This period, indicative of a mental state with fixed delusions, was in its efflorescence when Rousseau was forty-five, the paramount obsession manifesting itself in the thought that the Jesuits were preventing the publication of "Emile" until his death. Then began his wanderings—in Switzerland, in England, and back again in France, to escape his imaginary persecutors. His most fantastic interpretations relate to David Hume, whom he accused of employing nefarious methods to lure him to the other side of the Channel. On his return to France his delirium showed signs of great expansion, and he did not hesitate to write on dead walls and hoardings the following remarkable protestations: "The magistrates hate me because I have attacked their despicable meanesses"—"The philosophers whom I have unmasked, wishing to ruin me, are succeeding etc." The last period of this peculiar mental state was marked by an almost illimitable development in the delirium, accompanied, strange to record, by complete resignation. So great had the obsession of persecution become that he included in the plot against his peace, the ferrymen along the Seine and the boot-blacks of the Temple and the Palais-Royal. And what should not be forgotten, it was during the last phase of his malady that he wrote "Reveries of a Solitary Promenader."

ORIGINAL ARTICLES.

THE CLINICAL STUDY OF THE BLOOD: THE BIOLOGICAL SIGNIFICANCE OF ITS CELLS AND THE PATHOLOGICAL SIGNIFICANCE OF THEIR VARIATIONS.*

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There are many different diseases of the blood, some that are amenable to treatment and some that are not; some that with our present resources are inevitably fatal and some that with appropriate treatment should speedily eventuate in complete recovery; and yet all, fatal and trivial, giving much the same physiognomy and much the same obvious clinical characters the nature of which I need not take up time by describing. For the differentiation of many of them a microscopical examination of the blood is essential, and it is the method and results of that examination I wish to consider.

The blood, as all are well aware, consists of cells floating in a plasma, the liquor sanguinis. For our present purpose we may neglect the blood plasma and concentrate our attention on the blood corpuscles.

THE BLOOD CELLS.

The cellular elements consist of the red blood corpuscles or erythrocytes, the white blood corpuscles or leucocytes, and blood plates. The red blood corpuscles contain hæmoglobin which has the function of carrying oxygen from the lungs to the tissues, a deficit in which pigment is the factor in anæmia that threatens life. The red cells themselves, you remember, are bi-concave, non-nucleated discs, from 7 to 8 micro-millimetres in diameter, numbering in healthy men about 5,000,000 per cubic millimetre, and 4,500,000 in healthy women. The leucocytes are colourless nucleated cells of several different forms and sizes, numbering from 5,000 to 8,000 per cubic millimetre.

The blood plates, about which but little is known, are round colourless bodies varying in size from perhaps one-tenth to one-third of the size

*Read before the Tottenham Branch of the British Medical Association, March 12, 1909.

of a red blood corpuscle, and numbering, perhaps, 200,000 in the cubic millimetre. I do not intend to take up time by discussing these beyond saying that they are probably concerned with blood coagulation.

STEPS IN THE EXAMINATION OF THE BLOOD.

There are at least five more important steps in the clinical examination of the blood suitable for use in active medical practice. These are (1) the microscopic examination of plain fields of blood; (2) the estimation of the number of the red blood corpuscles; (3) the estimation of the number of the white blood corpuscles; (4) an estimation of the amount of hæmoglobin; and (5) the microscopical examination of dried and stained films to show the presence or absence of abnormal cell elements and the relative proportion of the different varieties of leucocytes.

EXAMINATION OF FRESH SPECIMENS.

Very much may be learned from merely looking with the microscope at a thin layer of fresh blood. Such a preparation is easily made, and need not take more than a minute or two. The tip of the finger is probably the best place from which to obtain it in adults, the lobe of the ear in children, for then they do not see the actual pricking, and in infants the plantar surface of the great toe.

The skin may be rubbed with a damp towel and then dried; the prick made with a clean needle, or the special lancet, a surgical needle or one-half of a clean steel pen nib—each of which should be sterilised in the gas or lamp, and little or no pressure should be exerted to make the blood flow. A clean cover glass is applied to the drop, and then placed flat on a slide, when the blood spreads itself between the two by capillarity. Such a preparation will show the following points: Whether or not the individual red cells are of a good yellow colour, indicating a sufficiency of hæmoglobin; whether they are of uniform size; if some are large, macrocytes, and others small, microcytes, some stress on blood formation is probably indicated; whether the shape be regular—in very grave anæmias the red cells may be pyriform, with several processes, or almost any shape derived from the disc, in which case poikilocytosis is said to be present; whether the corpuscles form rouleaux rapidly and perfectly as in health or not; whether the fibrin network is dense and regular or not; whether the leucocytes are in considerable excess or not, normally they are very sparse, say 1 to 1,000 reds, but in leukæmia there may be 1 to 100, or 50, or 20, or even an equal number.

ESTIMATION OF THE AMOUNT OF HÆMOGLOBIN.

The next step is the estimation of the amount of hæmoglobin present. For doing this there are several methods, but I shall ask you to consider two only. The easiest, quickest, and cheapest of all is the Tallquist method. A drop of blood is placed on white blotting paper and com-

pared with a printed colour scale like that I now show you. A modification of this method made by Hawksley, in which the colour scale more nearly corresponds with nature, I now show you.

The other method is that with Gower's hæmoglobinometer, which I also show you. It consists of two small test tubes of identical calibre, one of which is filled with glycerine jelly tinted with picro-carmin to something like the colour normal blood would give with a certain dilution; the other graduated to 100 divisions, so that when 20 cubic millimetres of healthy blood are diluted 100 times, the tint in the two tubes is the same. A few drops of water are put in this graduated tube, then 20 cm. of blood measured by the pipette provided are added, and the mixture is diluted with water until the colour in the two tubes is the same. A background of white paper is desirable in judging of the colours, or the tubes may be held at the level of the eye between it and the light. In my experience, 100 per cent. of HbO is never given by healthy blood with these tubes, and as an absolute standard it is not reliable, but for consecutive observations by the same person it serves very well.

I should like to refer to two modifications of this method. One is by Dr. Haldane, of Oxford, who, instead of using the picro-carmin preparation as a standard, uses the actual blood heated with carbonic oxide as obtained from coal gas. The blood being tested must also be treated with coal gas as by the apparatus I show you which makes the method rather less convenient than the other. The second modification is by Sahli, who uses, instead of the picro-carmin solution, a solution of hydrochlorate of hæmatin and the blood to be examined is diluted with a decinormal solution of hydrochloric acid (15 parts in 1,000); this also is less convenient.

Perhaps the chief *indication in diagnosis* from observation on hæmoglobin is that in chlorosis, and in most secondary anæmias, as from nephritis, cancer, tubercle, syphilis, lead poisoning, etc., the amount is reduced more than the red cells, *i. e.*, each red cell is poor in hæmoglobin, while in pernicious anæmia the number of red cells is reduced more than the hæmoglobin, *i. e.*, each cell is rich in the pigment. From the point of view of clinical work, it may be said that as the hæmoglobin rises in ordinary anæmias the red cells increase in number, and so, bearing this in mind, the labour of a blood-count may sometimes be saved.

Enumeration of the Corpuscles. The best apparatus for counting the corpuscles of the blood is the hæmocytometer of Thoma-Zeiss, the price of which is about 30s. It consists of a pipette for diluting the blood 100 times or 200 times, and a slide ruled in very small squares for counting the corpuscles with the microscope. The pipette consists of a capillary tube opening into a glass bulb. Blood is drawn up the tube to the level of a mark on its stem, then a diluting fluid (nothing more is necessary for the purpose than normal salt solution, which may be tinted with methyl violet) is sucked up into the bulb at the end of the tube to a mark on the tube above it and the blood and fluid are mixed by shaking a glass

bead about in the bulb. A drop of the mixture diluted 100 times, or, if rich blood, 200 times, is now placed on the slide.

This slide consists of a central disc bearing the rulings which is surrounded by a rampart of glass at a little higher level (1-10th mm.) so that when the cover is applied a definite depth of fluid is obtained, and a definite area is marked out by the squares, each being 1-400th m.m. The squares are focussed, using a 1-6 in. or $\frac{1}{8}$ in. objective, and the corpuscles will be seen lying on them. I do not think it necessary to trouble you with details of the technique. They are quite simple, and readily become automatic with a little practice.

The number of red cells in, say, 50 or 100 squares is counted, and the average taken. Then the following calculation is made: The space above each square is 1-4,000 c.m., and the blood has been diluted 100 times; so, supposing the average number of red cells in a square is 12, the 12 multiplied by 4,000 would give the number of corpuscles in a c.m. of diluted blood, *i. e.*, 48,000, and this, multiplied by 100 (the dilution), *viz.*, 4,800,000, the number in a c.m. of undiluted blood.

Enumeration of Leucocytes. The same principle may be used for the white blood corpuscles though, as they are so much less numerous, a wider bore pipette with a smaller bulb is often used to give a dilution of only 10 times (the necessary calculation being made at the end), but in that case some fluid must be used to dissolve the red cells (which would otherwise obscure the lines) and leave the white; such a fluid is a 0.3 per cent. solution of glacial acetic acid suitably tinted. As a rule, however, in clinical work, both red and white cells are counted with the aid of the red pipette, a dilution of 1 in 100—and a device is used of making a field of the microscope correspond, say, with 50 squares (this can be done by lengthening or shortening the draw tube), and then counting the leucocytes in groups of 50 squares at a time—so many in each field.

Variation in Number of Red Cells. An excess of red blood corpuscles is met with in congenital heart disease, in certain cases with chronic cyanosis, rising to 8,000,000, 9,000,000, 10,000,000 or even 12,000,000, in persons living at high altitudes, and in the newly-born. A diminution in their number is met with in anæmias of all kinds, and in pernicious anæmia may fall to 500,000, or even 250,000, and 100,000 has been recorded. In chlorosis the number of red cells is not much diminished—to 4,000,000, it may be; in leukæmia perhaps to 3,000,000; after infectious fevers, in late tuberculosis, in syphilis, perhaps to 2,500,000. The fall in post-hæmorrhagic anæmia depends, of course, on the amount of blood lost; but recovery is fairly rapid.

Variation in Number of Leucocytes. The number of leucocytes may be increased normally as in the new born, during digestion, in pregnancy, and after muscular exercise; it may be increased in many pathological conditions, of which leukæmia is the most striking, but a definite increase is seen in most acute infectious diseases—in pneumonia, erysipelas, diphtheria, ulcerative endocarditis, but diminished in typhoid and influenza,

among other diseases, and not altered in tuberculosis. There is a leucocytosis in appendicitis, especially if suppuration be present, thus differentiating it from typhoid. There is usually a leucocytosis in cancerous and other cachexias.

If a leucocytosis is not met with where it is expected, for example, in the early stages of pneumonia where it is looked upon as an index of the resisting power of the system to the infection, an unfavorable prognosis is so far indicated.

Dried and Stained Specimens of Blood. The method of staining thin layers of blood for microscopic examination is especially directed to the differentiation of the varieties of leucocytes—a differentiation which leads to important clinical conclusions—and this differentiation can only be satisfactorily made by examining their nuclei (which like the nuclei of the nucleated red cells are only visible when stained) and the staining reactions of their protoplasm. This method is probably the most important of all in such blood examination as we are considering.

A small drop of blood is allowed to diffuse itself between two clean cover slips placed face to face; these are then slid apart, leaving a thin film on each. By waving them in the air, they are rapidly dried, and are then ready for fixing before staining.

The ordinary *fixing* agents are heat, either by means of a moderately heated oven, 110° C. for an hour, or 150° for five minutes, or passing the films rapidly through a flame five or six times; a mixture of absolute alcohol and ether in equal parts in which they are immersed for half an hour or longer; or immersion in a mixture of one part formalin with nine of absolute alcohol for half a minute, after which they must be thoroughly washed in water.

But the method of fixing I intend to recommend to you is accomplished at the same time that the films are stained by the staining-method I intend to advise you to adopt, the fixing is accomplished by the alcohol in the staining fluid.

Jenner's Stain. There are many methods of staining blood films, but that which I have come to consider as the most reliable, rapid, simple, and efficient—in other words the most suitable for our purposes—is by Jenner's stain. It is an alcoholic solution of a compound of eosin with methylene blue. It is to be bought ready made, either from Grubler's stains, or preferably, I think, in Grubler's original bottles in the liquid form.

Blood stains are divisible into two kinds—acid (in which the acid radicle of its constituent salt is the staining part) such as picric acid or eosine, and basic (in which the basic radicle is the active part) such as methylene blue. Speaking generally, the acid stains (as eosine) stain the protoplasm especially, and the basic stains (as methylene blue) stain the nuclei especially.

So with Jenner's stain the red blood corpuscles are stained red with eosine, and the nuclei of the leucocytes blue with methylene blue. The

method for using this stain is as follows:—The dried films are covered with the stain and left for five minutes or so. It is poured off, and they are washed in *distilled water*, dried and mounted in cedar oil or balsam. I may say that at a pinch you may use some methyl blue from the stain available for tubercle bacilli, and the eosine from the nearest red ink.

Varieties of Leucocytes. The main object of staining blood, as I have said, is to differentiate the leucocytes, and to recognize the presence of abnormal cells. What, then, are the *varieties of leucocytes in normal blood*? Speaking roughly, they are two—lymphocytes, with hyaline protoplasm and a single nucleus, and granulocytes, with granular protoplasm and a multiform nucleus—called the polymorphonuclear leucocytes. But each of these is divisible into three varieties, hyaline cells into whether they are small or large lymphocytes or having a lobed nucleus—transitional leucocytes. The idea being (it is almost certainly erroneous) that the latter form a transitional stage between the cells with a single round nucleus and the multiform nucleus of the granulocyte. The granular cells are divided into those whose granules stain with acid dyes—oxyphile or eosinophile leucocytes, those with basic dyes—basophile leucocytes or mast cells, and those that colour with both—neutrophile leucocytes.

The non-granular or hyaline leucocytes are, therefore, three—the lymphocytes proper—the small mononuclear leucocytes, the large mononuclear leucocytes, and the transitional leucocytes.

The lymphocytes are a little smaller than the red blood corpuscle; both nucleus, which is round and nearly fills the cell, and the mere rim of hyaline protoplasm stain blue with methylene blue, the protoplasm more deeply than the nucleus; the nucleus has a nucleolus and a fine intranuclear network. In healthy adults they vary between 20 and 30 per cent. of all the leucocytes.

The large mononuclear leucocyte is two or three times as large as the red cell, the protoplasm is relatively more abundant in proportion to the nucleus—otherwise their characters resemble those of the lymphocyte.

The transitional leucocyte resembles the large mononuclear leucocyte in every way except that its nucleus is lobed. It represents an older stage of this mononuclear hyaline cell. These two latter forms taken together vary in normal blood between 4 and 8 per cent.

The polymorphonuclear leucocytes are a little smaller than the large mononuclear. They are readily recognized in films stained with nuclear stains by the appearance of the nucleus. This consists of several masses scattered throughout the cell at first sight detached, but really connected by fine strands of nuclear substance, the whole like a spare string of beads, being twisted on itself in the form of S or Z or Y or E. The protoplasm stains with acid dyes, *i. e.*, faintly pink with eosine, but the granules embedded in it vary in different cells in their colour reaction. In the first group they are fine, numerous, and stain a purplish pink with Jenner's stain; these are the neutrophile polymorphonuclear leucocytes.

In the second group, the granules are larger, not so densely crowded, and stain a bright deep pink with eosine; these are the eosinophile polymorphonuclears. The third group have large and still fewer granules which stain blue with Jenner's stain; these are the basophile polynuclears, or the mast cells of the Germans.

The neutrophiles are the phagocytes proper, and are actively amœboid; they are the most numerous of all the leucocytes in normal blood, varying from 60 to 80 per cent. The eosinophiles occur in from 1 to 5 per cent., and the mast cells from about 0.5 to 2 per cent.

Abnormal Cellular Elements. The abnormal cells which are important from a diagnostic point of view are two, first, a large mononuclear white cell—possibly the predecessor of the polynuclear leucocytes—normally found only in the bone marrow. These are called *myelocytes*. They are as large or a little larger than the polynuclear leucocytes, have a large round faintly blue staining nucleus, and granules either neutrophilic, eosinophilic, or basophilic.

The second abnormal cell is a *nucleated red cell*, the predecessor of the red blood corpuscle. In human foetal life, as in adult amphibia, birds, and reptiles, all the red cells are nucleated; but in healthy extra-uterine life they only occur in organs where blood formation is progressing, in the spleen in early extra-uterine life, and in the bone marrow in later life. But when stress of blood formation becomes great, the original nucleated forms escape in smaller or large numbers from the blood-forming organs into the general circulation. They are of three sizes—smaller than the red cell-microblasts, the size of a red corpuscle-normoblasts; and others two or three times larger—megaloblasts. The protoplasm is hyaline, yellow from hæmoglobin, and stains red with eosine like the ordinary red cell. The nucleus is round, has a coarse intranuclear network of even mesh, and no nucleolus, thus helping to distinguish it from the lymphocyte. Sometimes in the older cells, the nucleus stains so deeply with methyl blue that the network is not visible.

The Biological Significance of the Different Cells of the Blood. To take firstly the lymphocytes: these are hardly in essence blood corpuscles at all; it would probably be nearer the truth to call them lymph corpuscles—many of them at least are corpuscles of the lymph before they are corpuscles of the blood. They are formed in the lymph glands proper and in the lymph nodules in the spleen (there known as *malpighian bodies*) and elsewhere. If we study the structure of a lymph nodule we will find that there is a core of large mononucleated cells called the *germinal centre* by the Germans—surrounded by several layers of small mononucleated cells that have been formed by the division of the larger; these pass into the lymph or blood to become the small lymphocytes of the blood. But in conditions of stress on blood forming activity the large mononuclears may pass into the blood in greater number than normal, before they have divided into the small lymphocytes.

Next let us take the granulocytes: The polymorphonuclear leucocytes

are believed to be derived from large mononucleated cells occurring in numbers in the healthy bone marrow, the marrow cells or myelocytes. The nucleus has a nucleolus and the network in the nucleus is characteristically fine in mesh. These myelocytes, which have eosinophile, neutrophile, or basophile granules, under conditions of stress pass into the blood and become the abnormal myelocytes of the blood.

Next let us take the red blood corpuscles: At an early stage of its existence each red blood corpuscle is nucleated—a nucleated red cell. All are familiar with nucleation of ordinary red blood corpuscles in the case of the frog and other amphibia, the fishes, reptiles and birds—in them all their red blood corpuscles are nucleated red cells. In early foetal life of the human subject all the red cells are similarly nucleated. They are formed from similar but larger cells known as erythroblasts in the liver where they are associated with giant cells during early foetal life, in the spleen where again they are associated with giant cells during late foetal and early extra-uterine life, and in the bone marrows where they are again associated with giant cells during the whole of ordinary life. Under conditions of stress on blood-forming activity in the adult mammal as after copious hæmorrhage in dogs, as I have shown, they and the giant cells appear again in the spleen (the splenic pulp then looking almost exactly like the red bone marrow), and probably in the presence of chronic intoxications in the human subject. In leukæmia and other blood diseases erythroblasts with giant cells may be found in the spleen and liver. In regard to the giant cells which I may say are not amoeboid, I have found even them in the blood of dogs for some hours after severe hæmorrhage and cases have later appeared on record where in conditions of severe anæmia they have been found forming emboli in the human lung. So then the escape of red blood corpuscles, while still nucleated, from the blood-forming tissues into the circulation must be considered an evidence of stress on blood formation, still more when the erythroblasts escape into the blood megaloblasts as so called.

Signs of Stress on Blood Formation. To summarize the signs of this blood forming stress derived from the study of the blood: (1) the red blood corpuscles vary in size, megalocytes appear in number and the corpuscles may alter in shape giving poikilocytosis; (2) the large lymphocytes may come to be in excess 20 or 30 per cent. instead of 5 or 6 per cent.; (3) myelocytes, or as they are sometimes unhappily called, marrow-cells, may appear in the blood in numbers; (4) and nucleated red cells appear in the blood, normoblasts in the first instance and if the stress be prolonged megaloblasts in numbers.

The Clinical Indication of Abnormal Combination of Cells. I have described the normal cell elements of the blood and have given the ordinary percentage occurrence of each type and the usual method of making a *differential leucocyte* count is to place each leucocyte recognised in a film under its proper heading in a column, add each column up

separately, and all the columns together, and express each sort as a percentage of the whole.

I have also described the principal kinds of cells which occur in pathological states in the blood that are not normally present there. What are their indications in diagnosis? Mast cells are greatly increased in leukæmia and may even be in greater number than the largely increased eosinophiles.

The eosinophile leucocytes of asthma are not only greatly increased in leukæmia but also in the paroxysmal stage where they may have some diagnostic importance in trichinosis and in the presence of intestinal parasites, in skin diseases of various kinds and in malignant disease. They are decreased in acute infections and septic diseases.

The neutrophile polynuclear leucocytes make up the leucocytosis of acute infectious diseases, of digestion, of pregnancy, and of septic states particularly, and perhaps in ulcerative endocarditis. On the other hand they are usually diminished in typhoid, measles, and influenza and unaffected in tuberculosis unless complications and especially suppuration have arisen.

Diagnosis and Prognosis Based on the Recognition of These Abnormal Occurrences and Combinations. Shortly nucleated red cells are the index of any severe anæmia, whether after copious hæmorrhage from any cause or from some hypothetical chronic toxæmia as in pernicious anæmia or spleno-medullary leukæmia. In pernicious anæmia when it is recognized they are much less numerous according to my own experience than in leukæmia and in any case they are of grave prognostic import, especially when in the form of megaloblasts.

Poikilocytosis again is a sign of intense anæmia and may be due to accidental or other hæmorrhages almost as often as to such primary anæmia as pernicious anæmia.

Myelocytes, while they may occur sparsely in the early weeks of healthy life, or in rickets, congenital syphilis and other conditions, are especially diagnostic of spleno-medullary leukæmia where they occur in large numbers. The mononuclear leucocytes are increased in the gastro-intestinal diseases of infancy, in whooping cough and several other diseases, but *par excellence* in lymphatic leukæmia and in the acute varieties of this disease and in a probably distinct disease of children known as lymphocythæmia, in which the prognosis is extremely grave, the large lymphocytes are in great excess.

In conclusion I would suggest that a study of the blood is fundamental in the diagnosis of a large group of diseases and that it is a possible and even suitable subject for original work even for those who are unable to spare the time for what may be called laboratory research.

LECTURES ON PSYCHIATRY.

(PLANNED TO INCLUDE SIXTEEN EXERCISES FOR SENIOR STUDENTS.)

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INTRODUCTION.

With the awakening of interest in psychiatry there has come about an active consideration of methods by which an adequate knowledge of mental diseases may be given to students. Teachers of psychiatry have had to face a pedagogic problem of unusual difficulty, and in a sense, unique. While there is a general admission that psychiatry is of great importance to the medical student, especially in its medico-legal relations, yet, its teaching has taken up but little of the interest of those who plan out the course of instruction in medical schools. The probable explanation of this lies in the fact that in most communities where its teaching is undertaken, the sources of clinical material are so far removed from the control of the instructor, that it seems almost impossible to plan a successful course. As a rule the clinical material is to be found in asylums far removed from the city, access to which by students is both difficult and time-consuming. In other places where the source of material is within reasonable distance, its control is not in the hands of the teacher. In a few cities, no such difficulty is presented. Here in St. Louis, however, the conditions are largely those of the average city in this country, in which the teaching of psychiatry has been attempted in the medical schools, both didactically and clinically. Clinical material in great abundance is found in the City Asylum, a large institution under the direct and full control of a superintendent, an appointee of the city. This superintendent has no teaching position in the medical schools, there is no staff of visiting physicians, so that the teachers of psychiatry have no connection whatever with the institution. Each school in the city is allowed one day a week for half a year. At this time the senior students of the school are given, for an hour and a half to two hours, clinical demonstrations of cases by an instructor in psychiatry at the school of which they are members. Material is furnished through the courtesy of the superintendent. The pedagogical problem is then as follows: What is the best possible method for putting before a class of senior students such a knowledge of mental diseases as can be given in a series of sixteen lectures with clinical demonstrations? It was found that a carefully planned course of didactic lectures, of about three-quarters of an hour each, to be followed by a clinic in which cases illustrating the sub-

jects of the lectures were presented, the clinic lasting about one and one-half hour and followed by a ward visit in small sections, was the most practicable method. The advantage of such a scheme of instruction is that the student is presented with a definite succession of the facts of mental diseases, a succession of clinical pictures and some notion of asylum methods and therapy. Contrary to what might be supposed, it is a very easy matter to arouse in the average student a vital and increasing interest in psychiatry. It has been found by experience that perhaps there is no subject to which an average student lends a more willing ear and a more earnest attention. It is not, however, by didactic lectures that this interest can either be aroused or retained, but the combination of the lecture and the clinical demonstration are essential.

The lectures herewith set down are the result of some years' work in the attempt to place before the senior students in the St. Louis University Medical School some notion of psychiatry. They aim to give in orderly succession the chief facts and theories of psychiatry, to make the student feel an interest in diseases of the mind, and to enable him to realize the importance of a knowledge of psychiatry on the part of the physician both in his relation to his patient, and the relation of that patient to the State. I need scarcely add that no claim for originality is made for these lectures. I am under obligations to all of the well-known textbooks, especially to that of Kraepelin and to articles too numerous to mention that have appeared in the last few years in various journals. I especially wish to express my appreciation of the courtesy of Dr. H. Atkins, the superintendent of the St. Louis Asylum, for furnishing clinical material, and to Dr. Unterberg, my assistant, for intelligently selecting the cases for demonstration. These lectures are, therefore, printed as a contribution to the pedagogic aspect of psychiatry.

LECTURE No. I.

The object of this brief course in psychiatry is to make you acquainted with some of the important facts of diseases of the mind, both as a part of the science of medicine and as a part of your medical discipline, by bringing you into as close contact as is possible with individuals who are the subjects of mental diseases. The most important feature of this disease lies in such deviations from what is considered the normal and average mentality as to justify the individuals so affected to be regarded as insane. The study of this science is called "psychiatry," and its purpose may be put down in this way.

Psychiatry attempts to describe within the present limits of our knowledge the pathological and abnormal phenomena of the mind, and to understand them as far as it is possible to do so. It further aims to discover and discuss rational measures, medical and otherwise, by which such disturbances may be corrected, and the individual who is the subject of them be directed along the path which may be considered normal for him. The study of the pathological changes underlying such condi-

tions is sometimes called "mental pathology." This part of the subject is of less importance at the present time, owing to the limited progress that has been made in spite of the efforts of numerous investigators. Anatomical changes underlying abnormal mental states are so often not found at all, or, so illusive that with the exception of two or three diseases, no positive relation between anatomical changes and abnormal symptoms can be deduced. The study of mental functions, found in abnormal mental conditions, is termed "abnormal psychology." It is probable that under this head the greatest advances in our knowledge of the causes, the origin and the development of mental symptoms will be found.

In studying the above definition of psychiatry I might call your attention to the qualification which was made in regard to the limits of our understanding of the mind. It is just in this limitation that one of the great difficulties of the subject lies. We must always consider that the only instrument we have to examine a diseased mind is a mind essentially of the same kind without being diseased. This is, and will always be, our only instrument of investigation. For this reason we must see that we can precede only to a certain limit. This limit depends upon an appreciation of our own mental state and a comparison of that with others, both diseased and normal.

The question of personality, or rather changes in personality, is all important in the study of psychiatry. I might emphasize here the fact that a case of insanity is always an individual that is insane and that he is different from all other individuals by that complex which we call "personality." An educated, cultured individual will react to abnormal mental processes in a different way than one who is ignorant and uncultured. The resulting clinical picture in the one will be evidently different from the clinical picture in the other, inasmuch as the individual in one case is different from that in another. There is in this a striking distinction from the more common organic diseases. Whether an educated or uncultured individual is attacked by typhoid fever, the resulting clinical picture is largely the same, or, if it does differ, this difference does not depend upon the grade culture of the individual.

What, then, is meant by the term "insanity?" All departments of knowledge should have a clear conception of what is implied in that department. A difficulty in psychiatry is immediately met with when we try to give a definition of the very subject we propose to study. The problem is almost unique. There is scarcely a department of human knowledge, the study of which can not be started by a definition. When we come to define insanity we are immediately met with the objection that, inasmuch as the normal sane individual cannot be defined nor limited, therefore the abnormal insane individual cannot. In spite of many efforts, no adequate definition of insanity, from the medical point of view, has ever been made. There is no definition which leaves in our mind a feeling of satisfaction. It is necessary here to sharply dif-

ferentiate the medical from the legal point of view. The law has been forced to make a dogmatic definition, a definition that shall fulfill the purpose of justice. This definition has absolutely nothing to do with the medical point of view, nor has it shown any tendency to shape itself along the lines which psychiatry has developed. It is still the same definition that was devised when psychiatry was yet in its infancy. The law's definition concerns itself with only one phase of the subject, that is, the patient's responsibility before the law. It is assumed, of course, that in order to be tried for a crime, the individual must be responsible for the deed that he committed. For this reason the law has to do with questions of knowledge, of what is good and bad, of what is right and wrong, and as long as the patient under consideration has that knowledge, so long does the law consider him normal.

In order to get closer to our notion of insanity, a few samples of attempted definitions might be given:

Chapin says that insanity is that mental condition characterized by a prolonged change in the usual manner of thinking, acting and feeling, the result of disease or mental degeneration.

Esquirol: A cerebral affection, ordinarily chronic, without fever, characterized by disorders of the sensibility, of the intelligence, and of the will.

Regis: Insanity is a special disease, a form of alienation, characterized by the accidental, unconscious and more or less permanent disturbance of the reason.

Dana: Insanity is a serious alteration in the psychical functions of the brain. This leads to such departure from the normal in speech and conduct, that the patient can no longer adapt himself sufficiently to his environment.

It can be seen from these definitions that they are concerned either with an attempt to give it a psychological basis or with an attempt to describe an insane individual in relation to his environment. In other words, these definitions try to give the cause and the effect of disease at the same time, an obviously impracticable thing to do in a definition. It is well nigh impossible to define so complicated a thing as an individual, and is equally so to define so much more complicated a thing as an abnormal individual. Therefore, no definition, that has any utility, can likely be devised. The one thing that can be done, however, is to indicate in a general way what an insane individual means to one who is sane, and what he is in relation to his environment. This brings us to the question of conduct which may be considered in general as the reaction of an individual to his environment insofar as his personality finds a partial expression. Normal conduct is largely a matter of the interaction of the average of personalities, in any given stratum of society, with modifications of environment, family, society, and other factors taken into account. It is a disturbance in conduct, a lack of normal reaction to his kind and circumstance which, in the minds of most of us, points to an

individual as being insane. When this reaction, or this disturbance in conduct passes beyond the limit which the organized law and custom have set, then the individual becomes a subject of legal scrutiny, and upon his insanity or sanity depends the question of his legal responsibility. It is in this larger sense that I would have you consider an insane individual, and from the clinical point of view there will always be some such disturbance in conduct that will receive emphasis.

White, in a recent interesting little book, entitled, "Outlines of Psychiatry," with this notion in view, has devised a definition which, to my mind, is extremely valuable. Insanity, he says, is a disorder of the mind, due to disease of the brain, manifesting itself by more or less prolonged departure from the individual's usual manner of thinking, feeling and acting, and resulting in a lessened capacity for adaptation to the environment.

It can be seen from this how much we have advanced from the early attempts that were made to define insanity. The earlier attempts were doomed to fail because the limits of the problem were not clearly seen. With the acknowledgement that a perfect or even a practical definition was well nigh impossible, the beginning of a more adequate definition was in sight.

(Cases were shown to demonstrate different grades of intelligence as affected by mental disease, modifications of conduct and personality.)

THE PRESENCE OF TUBERCLE BACILLI IN THE CIRCULATING BLOOD IN TUBERCULOSIS.

(From the Pathologic Laboratory of the St. Louis City Hospital.)

By ALBERT E. TAUSSIG, M. D., of St. Louis.

In February of this year much interest was excited by a paper by Rosenberger with the same title as that of this article. By the use of a comparatively simple technique, he had found what he considered tubercle bacilli in every one of a large number of cases of tuberculosis, incipient and advanced, pulmonary, glandular or involving the bones. Briefly, his method consisted in taking 5 c.c. or less of blood from a vein, mixing it with 5 c.c. of a sterile physiological salt solution containing two per cent. of sodium citrate. The tubes were allowed to stand 24 hours or longer in the ice chest. Thick spreads were made of the sediment. These were allowed to dry, then laked with distilled water and, after all the hemoglobin had been extracted, were stained and counterstained in the usual manner for tubercle bacilli. Sometimes a prolonged search was required for the demonstration of the bacilli in such a slide, but usually, it was asserted, they could be found at least as readily as in the sputum.

It was not long, however, before adverse opinions were uttered. A few clinicians and pathologists expressed themselves as having been successful with the method, but the majority confessed failure. In the St. Louis City Hospital, a number of my co-workers and I tried the method on a large number of tuberculous patients, immediately after the appearance of Rosenberger's paper, but with uniformly negative results. The objection that our failure to find the bacilli was due to lack of patience or to faulty technique could so readily be made that it seemed worth while to subject Rosenberger's results to some more crucial test. From a series of patients with relatively advanced tuberculosis, spreads were made according to Rosenberger's method and, in addition, the entire sediment from 5 c.c. or more of the venous blood was injected subcutaneously into the groin of a guinea-pig. As will be seen from the following summary, the bacilli could not be found in a single case, while the guinea-pigs showed at no time any evidence of infection and, when killed from 72 to 90 days after inoculation, showed no evidence of tuberculosis. It is evident that if the bacilli can be found microscopically in a spread, the inoculation of a guinea-pig with an amount of sediment many times as great as that used for the microscopic preparation could not fail to produce tuberculosis.

Case 1. Pulmonary tuberculosis with infiltration of one apex; tubercle bacilli in the sputum. Spread, according to Rosenberger, negative. Guinea-pig, inoculated with entire sediment of 5 c.c. of blood, remains well and fat. No lesion at site of inoculation. After 90 days the pig is killed; no evidence of tuberculosis found.

Case 2. Pulmonary tuberculosis with cavities; tubercle bacilli in sputum. Spread, according to Rosenberger, negative. Guinea-pig inoculated as above; remains well and, when killed, 89 days later, shows no evidence of tuberculosis.

Case 3. Tuberculous peritonitis with cavities in the lungs; tubercle bacilli in sputum. Spread, according to Rosenberger, negative. Entire sediment of 10 c.c. of blood inoculated into two guinea-pigs. Both remain well, one of them giving birth to two young. When killed, after 83 days, no evidence of tuberculosis is found.

Case 4. Pulmonary tuberculosis eventually developing general miliary tuberculosis, (autopsy). No tubercle bacilli found in sputum. Spread, according to Rosenberger, negative. Guinea-pig injected with entire sediment of 5 c.c. venous blood, remains well, and, when killed, 83 days after inoculation, shows no sign of tuberculosis.

Case 5. Pulmonary tuberculosis with cavities, terminal. Tubercle bacilli found in sputum. Spread, according to Rosenberger, negative. Guinea-pig injected with entire sediment of 5 c.c. blood, loses weight, but does not seem ill. Gave birth to healthy offspring. When killed, 72 days after inoculation, shows no evidence of tuberculosis.

Case 6. Pulmonary tuberculosis, cavities in both apices, tuberculous peritonitis; tubercle bacilli in the sputum. Spread, according to Rosenberger, negative. Guinea-pig inoculated with entire sediment from 5 c.c. blood remains healthy and, when killed, 72 days later, is found not to be tuberculous.

It was not considered worth while to carry this work further since the point at issue was not whether the blood of tuberculous individuals ever contains tubercle bacilli, but whether it always or even usually does so. It will be seen that the cases selected were of a nature to lead one to expect a tubercle-bacillemia, if this ever occurs in a localized infection. Rosenberger's contention, that his method is of diagnostic value in tuberculosis, must therefore be considered mistaken.

While the above work was in progress, two articles appeared in which the writers arrived at the same results and one of which, at least, throws further light upon the question at issue. Bailey inoculated seventeen guinea-pigs with 1 to 2 c.c. of sedimented blood (fifteen with the blood from cases of advanced tuberculosis and two with the heart's blood from autopsy on cases of general miliary tuberculosis). None of the animals became tuberculous. In every one of his smears, according to Rosenberger's method, artifacts resembling tubercle bacilli were found. It is a well-known fact that such acid-fast artifacts occur whenever sputum or other albuminous substance is heated before it is quite dry. In our spreads such artifacts were absent, probably on account of the scrupulous care with which this error was avoided. Brem also obtained negative results and has put his finger on a still more insidious source of error. He found that the distilled water, furnished to his laboratory, invariably contained an acid-fast bacillus, undistinguishable

microscopically from the tubercle bacillus and probably belonging to the group of the grass bacillus. In all of the solutions made up with this water, as well as in all blood-spreads laked with it, the bacillus could be demonstrated. Water, freshly distilled from vessels rinsed with strong nitric acid, and blood from tuberculous individuals, sedimented in solutions made from this water and laked with it, failed to reveal the presence of any tubercle bacillus-like organisms. In our cases, this source of error was avoided, probably because we used fresh tap-water instead of distilled water.

It gives me pleasure to acknowledge my indebtedness to Dr. D. L. Harris, City Bacteriologist, for permission to work in his laboratory and for numberless other favors.

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THE PHYSIOLOGY OF SHOCK.*

By M. G. SEELIG, M. D., and E. P. LYON, M. D., St. Louis, Mo.

It seemed only a short while ago that the question regarding the underlying physiological basis of shock was settled for good and all. The excellent experimental work done by Crile established a doctrine, so generally accepted that one hardly felt the necessity for any further investigative work along similar lines. And yet, withall, the problem of surgical shock is not solved, and we are about as much in the dark as we were two decades ago. It is not entirely without interest to survey, from an historical point of view, the work that has been done along these lines. The clinical picture of shock, such as we recognize it to-day, was not unknown to the ancients; indeed, they vividly expressed their loss to account for death following severe trauma, without visible post-mortem lesions of gravity, by referring the *exitus lethalis* to a "Deus ignotus." And right here it may be said that the unknown god, by virtue of inherent necessity, still plays no small part in our conception of the etiology of shock. This vague and, if we may so term it, theistic conception was not displaced until toward the beginning of the 19th century. Indeed, the word "shock" as we now use it, was first introduced in 1795, by James Latta. Up to this time "shock" signified merely a force, or blow, but Latta changed the significance of the word, so that it connoted the results consequent upon a force or blow. So apt is the word, and so specific in nature, that it has defied translation, and been taken over bodily in all the continental tongues.

Guthrie, Hennen and Travers did much to stimulate interest in the causation of shock, and their work was all the more effective by virtue of the fact that just about this time (1827) railroads were coming into popular use, and were increasing the list of cases of shock due to severe trauma. Astley Cooper, Copland, Paget, Erichsen, Pirogoff, Little, Syme, Savory, all added contributions to the subject. So far, however, no one had attempted to attack the problem by way of experiment. The Crimean war, and also our own civil war, with their tremendously long lists of injuries and fatalities, emphasized the absolute necessity of determining to what factors this obscure symptom complex owed its origin. The medical report of the Crimean war epitomized, in one sentence, the uncertain state of knowledge concerning shock, when it stated that "the term shock is a convenient name, but not a very philosophical

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Note.—From the Physiological Laboratory of the Medical Department of St. Louis University.

one." As a result of observations made during our civil war, W. W. Keen, Weir-Mitchell and George Morehouse,¹ working together, framed a theory that explained the phenomena of shock in accordance with the same principles laid down by Crile nearly forty years later. Keen's work was largely clinical, Crile's largely experimental. Keen's clinical deductions, however, were confirmed by experimental work done in Germany during the seventies by Jordan and Fischer, both of whom founded their work largely on the now famous experiments of Goltz.

As the problem stands to-day there are several contradictory theories. Crile⁹ and his followers maintain that vasomotor exhaustion is the primary cause of shock, Boise¹⁰ states that cardiac exhaustion is the prime cause, whereas Howell¹¹ believes that both these factors (cardiac and vascular) must be reckoned with. Meltzer,¹² after a critical survey of the literature, concludes that shock is consequent on the development of the inhibitory side of all the functions of the body. Kinnaman² argues for a disturbance of the thermogenic function, Jaboulay³ for the formation of an irreducible oxyhemoglobin, Vale⁴ for an increased specific gravity of the blood, Henderson⁵ for the reduction of the carbon dioxide content of the blood and tissues (acapnia), Bainbridge and Parkinson⁶ for a loss of chromaffin tissue following trauma, and Schur and Weisel⁷ for a loss of this same tissue following the administration of volatile anesthetics.

Our object is neither to criticise these various theories nor to add a new theory to the already formidably long list. Cardiac excitation and inhibition, vascular dilatation and contraction, the *modus operandi* of the sympathetic nervous system, the complex phenomena of exhaustion and inhibition, would all have to be taken into account by a theory, despite the fact that not one of the factors that we have mentioned is understood fully.

This much is certain, however: that low blood pressure is a constant accompaniment of a pronounced degree of shock—so constant, indeed, that investigators practically always express the state of shock in terms of manometric pressure. We have based our experiments on the fact that the blood pressure is always low in shock, and we have set as our problem the determination whether the peripheral vessels are contracted or dilated during the time that the pressure is low in the larger, more centrally situated vessels, such as the carotids.

Mitchell, Morehouse and Keen, Groeningen and others assert that the peripheral vessels are not contracted, because, in the first place, no one has ever shown that they are, and, in the second place, because it is not probable that the peripheral vessels can be contracted tightly for any great length of time.

1. Circular No. 6, Surgeon General's office, 1864.
2. Kinnaman, R. C.; *Internat. Jour. Surg.*, 1904, p. 378.
3. Jaboulay, L.; *Lyon méd.*, 1904, p. 378.
4. Vale, F. P. *Med. Rec.*, Aug. 27, 1904.
5. Henderson, Y.; *Am. Jour. Physiol.*, 1908, p. 126.
7. *Wien. klin. Wehnschr.*, Feb. 20, 1908.

Crile argues that, consequent on vasomotor exhaustion, the peripheral vascular system is paralytic and, therefore, relaxed. Porter,⁸ on the other hand, denies Crile's contentions *in toto*, and seems to show that the vasomotor center is not exhausted. Neither Crile nor Porter, however, directed their attention to the vessels themselves.

Malcolm,¹³ of London, dealing with the problem from a purely clinical point of view, makes two assertions: 1, that the peripheral vascular system is contracted in shock; and, 2, that a state of low blood pressure is thoroughly consistent with contracted peripheral arterioles. Malcolm makes an uncommonly strong clinical argument against the views of Crile in a fashion that refreshingly demonstrates the invaluable aid of clinical medicine to laboratory experimentation. If the theory of vasomotor exhaustion is correct, says Malcolm, then the network of smaller peripheral arterioles, being cut off from central control, must be relaxed. This relaxation should result in an overfilling of the vessels, but, as a matter of fact, all clinical evidence speaks against such an overfilling: the body surface is cold and pale, the mucous membranes are anemic, incisions made during the state of shock are almost bloodless, the radial pulse is often small to the degree of being inappreciable, and the application of surface warmth tends to lessen the symptoms of shock, despite the fact that warmth usually relaxes vessels.

There are three possible ways of determining whether the peripheral vessels are dilated or contracted: 1, the vessels may be inspected visually; 2, the outflow of blood from an organ or extremity may be measured; 3, coincident variations in venous and arterial pressure may be measured. In our work, which has been done on dogs, we have used only the first two or three methods. We studied visually the vessels of the retina and measured the outflow from the femoral vein. We selected the eye as the site of visual inspection of the caliber of the vessels, because this is the only situation where the vessels can be studied without the necessity of exposing them by dissection. It is unnecessary to say that the caliber of a vessel that has been traumatized by dissection affords no reliable index of the caliber of that same vessel in an undisturbed state. We selected the femoral vein from which to measure the outflow because the circulation in the extremity is, in the strictest sense of the word, peripheral, and because the femoral vein is more accessible than is the axillary.

Our procedure was as follows: Under Grehant anesthesia the carotid artery was connected to a recording manometer and the blood tracing started. Both femoral veins were dissected free, ligated where they leave the thigh to enter the abdomen, clamped just below this, and divided between ligature and clamp. Paraffined canulas were tied into the distal

8. Porter, W. T.; *Am. Jour. Physiol.*, 1907-08, pp. 399, 444, 500.

9. Crile, G. W.; *Blood Pressure in Surgery*. Phila., 1903; *An Experimental Inquiry into Surgical Shock*. Phila., 1899.

10. *Am. Jour. Obstetrics*, 1907; *Trans. Am. Gyn. Assn.*, 1908.

11. *Amer. Med.*, 1904, p. 482.

12. *Arch. of Int. Med.*, July, 1908, Vol. 1, p. 571.

13. Malcolm, J. D.; *Lancet*, 1905, i, ii, 57 *Med. Chir. Tr.*, 1908.

ends of the veins. Both sciatic nerves were dissected free at the posterior aspect of both thighs, and a bridle ligature was placed under each nerve so that it could be drawn out and divided with ease and rapidity. Only a minimal amount of fall of blood pressure resulted from this preliminary, as a rule.

The clamp was now removed from the left femoral and the blood allowed to flow through the canula into a tall glass graduate of moderately small caliber. After about 25 or 30 c.c. had flowed out and the current of blood was running smoothly and evenly, readings were begun in order

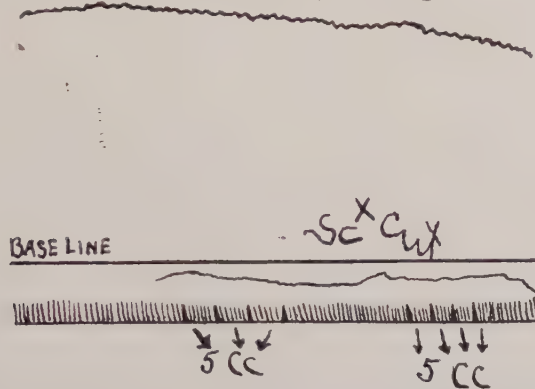


Fig. 1.—Tracing indicating outflow of blood in experiment on Dog 3. Moderate blood pressure. No evidence of shock. Division of sciatic (at X) followed by more rapid outflow of blood from femoral vein. Time markings, 1 second.

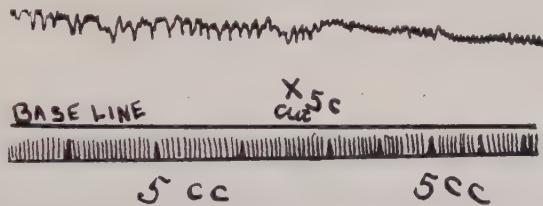


Fig. 2.—Tracing indicating outflow of blood in experiment on Dog 3. Very low blood pressure. Animal in profound shock approaching *exitus letalis*. Division of sciatic (X) followed by a proportionately more rapid outflow from femoral vein than in Fig. 1. Time markings, 1 second.

to note the rapidity of the flow. The method of making these readings was as follows: At the moment the reading was begun an electric button connected with the second-time marker was pushed. After 5 c.c. of blood had flowed the button was pushed again, and this was repeated at the completion of the flow of each fifth cubic centimeter of blood until the time record on the drum showed four or five periods, each one representing the time flow for 5 c.c. of blood. Then the left sciatic nerve was severed and, after waiting a short while for the flow to steady, the time flow for 5 c.c. was recorded several times. The animal was then reduced by a state of shock, by manipulation and chilling of the abdominal viscera, and after the blood pressure showed a permanent fall the blood flow was measured from the right femoral vein, just as it had been from the left one, before and after section of the right sciatic nerve.

The vast majority of vasomotor impulses that reach the blood vessels

of the hind leg of a dog travel through the sciatic nerve; therefore, as is well known, severance of this nerve results in vasodilation in the extremity, and consequently in a more rapid flow of blood from the femoral vein. This point is illustrated by the tracing shown in Figure 1. Before the sciatic was cut it took seven seconds for 5 c.c. of blood to flow out, whereas after the sciatic was divided the same quantity of blood flowed out in five seconds. The crux of these experiments lay in the rate of outflow after the animal was reduced to a state of shock, for if in profound shock the vessels are beyond the control of the vasomotor centers, then severance of the sciatic nerve ought not to make any appreciable difference in the rate of flow. All our experiments showed that the proportional rate of flow from the vein was more rapid after division of the sciatic in a shocked animal than it has been from the opposite veins before the animal had entered the state of shock. Figure 2 is a continuation of the tracing shown in Figure 1, taken from Dog 3 of our series. This portion of the tracing represents a period when the animal was in a profound degree of shock. It will be noted that before the sciatic was divided it took nineteen seconds for 5 c.c. of blood to flow, whereas after section of the nerve it required only eleven seconds. This shows that the intact sciatic must have been transmitting impulses that were maintaining vascular tone. More than this, the proportionately more rapid flow* can not be due to an actually greater dilatation of the vessels in one instance than in the other, because in both instances we have a maximal dilatation consequent on severance of the nerve. It must be due to the fact that during shock the vessels (arterioles and capillaries) are more contracted than they are before the animal shows the effects of trauma. It must be borne in mind clearly that these experiments do not show anything more than that the division of the sciatic nerve of a shocked animal causes dilatation of the vessels of the leg, just as it does in a normal animal. This dilatation, however, is proportionately greater than that which occurs in the normal animal, and this proportional difference must be referred to the fact that in the shocked animal, before division of the sciatic, the vessels are in a state of greater contraction than they are in the normal animal.

Two reasonable objections may be made to our results, on the ground, first, that the time measurements were not accurate in the strictest scientific sense, and, second, that the anterior crural nerve was not severed so as to cut off all possible vasomotor impulses to the leg. As regards time measurements, they were not taken automatically and were, therefore, not true to a fraction of a second. Repeated experiments, however, demonstrated that this source of error was minimal, and, furthermore, our object was not to measure the exact time rate. We did not sever the anterior crural, because we found this procedure to be unnecessary. Our object was not to cut off all impulses, but to block out most of them.

*In the normal animal, the rate of flow before and after division of the sciatic was 7 to 5, whereas in the shocked animal the rate was 19 to 11. These two sets of figures demonstrate a proportionately more rapid outflow in the shocked animal.

The task now remains to confirm by visual inspection the statement that the peripheral vessels are contracted. For reasons already stated, we selected the retina as our field for this part of our work, and we are indebted to Dr. John Green, Jr., for our ophthalmic reports. Unfortunately, we failed in efforts to devise a scheme for measuring, with absolute accuracy, the diameters of the retinal vessels. In order that Dr. Green might not be prejudiced by the facts already secured by us, he was not told about them, being merely requested to examine the fundi of the dogs' eyes, before and after shock was induced, and to note carefully the size of the vessels. He took the size of the optic disc as his standard and compared the size of the vessels with it. In every instance he reported that the vessels showed a marked degree of contraction after the animal was in shock. The vessels contracted down to from one-third to one-half of their size before shock.

Two observations were particularly interesting: In one case the dog died immediately after an examination of the fundus which had disclosed marked contraction of the vessels, thereby demonstrating that vasoconstriction persisted up to the very point of *exitus lethalis*. Unfortunately, we neglected to examine any of the fundi after death in order to see if vascular relaxation occurred. The second observation of especial interest was a case in which the retinal vessels were contracted so tightly as to make them resemble mere strands. In this connection it is interesting to note that ophthalmic literature contains at least two reports¹⁴ of sudden blindness occurring during shock, lasting from two to five hours, and then passing off without leaving any demonstrable eye changes or disturbances of vision. Roberts, who makes these reports, does not give the fundus findings during the state of shock, nor does he attempt to explain the cause of the blindness; but it seems fairly reasonable to assume that the occurrence of a sudden acute anemia of the retina, resulting from pronounced contraction of the retinal vessels, might cause transient blindness.

In conclusion it is important again to emphasize the fact that the experimental work detailed in this paper is in no sense of the word to be taken as an explanation of the causative factor or factors of shock. Just as Porter claims to show explicitly that in shock the vasomotor center is not exhausted and, therefore, implicitly that the peripheral vessels are not paralyzed, so we try to show explicitly that the peripheral vessels are contracted, and implicitly that not all the vasomotor centers can be exhausted. The complexity of the vasomotor apparatus, with its multiplicity of centers, and the seemingly independent action of many of these centers, render it impossible to frame a satisfactory theory based on our results. This much may be said with assurance: If the work herein detailed stands the test of confirmation, then the doctrine that shock is due to vasomotor exhaustion must be revised.

14. Roberts, W. O.; Am. Pract. and News, 1907, p. 24.

Note.—A complete bibliography of Shock up to 1886 may be found in G. H. Ghroeninger's "Ueber den Shock," Wiesbaden, 1885, from which we have quoted freely in the opening paragraphs.

SYPHILIS OF THE EXTERNAL EYE.*

By CASEY. A. WOOD, M. D., of Chicago, Ill.

It is manifestly impossible to treat this subject with any approach to completeness in the short time at my disposal. Indeed, when one considers that the Alexander monograph (*Syphilis und Auge*), even at the time it was written, occupied some 150 pages of print for this purpose, it will be apparent that I shall be barely able to do more than mention the important sections of my subject and to place emphasis upon only a few points that I have come to regard as essentials.

To that end I shall say nothing of purely orbital lesions, or of lues of the extraocular muscles.

Alexander found 2.16 per cent. of all eye diseases to be luetic in character, and in spite of lower and still higher estimates by other authorities, that percentage may be regarded as substantially correct.

Syphilis of the Lachrymal Gland.—In my judgment, the chief gland of the lachrymal apparatus is more frequently the subject of lues than is generally believed. The diagnosis is not always easy, as the signs of its involvement are not generally prominent. Apart from swelling, slight tenderness and trivial impairment of function, one's attention is not often called to this exhibition of the disease, especially as it is usually associated with other manifestations of lues, and promptly recovers under the systemic treatment given the latter.

Syphilis of the Eyelid. Chancre of the lid, especially of the palpebral margin, also presents difficulties in diagnosis. These are by no means due to masked symptoms, but to the fact that the initial sore often simulates the appearance of a style, a suppurating marginal chalazion, dacryocystitis acuta, tubercle and vaccinia. However, when one sees an ulcer of the lid edge with an indurated base, sanious discharge, associated with enlargement of the corresponding preauricular (sometimes the submaxillary) gland, one may feel suspicious of the disease.

In this and other events of suspected luetic origin there are always the spirochæta and Wassermann tests—one or both—to render the diagnosis easy and certain.

I have little time to refer to the *modus infectionis* of this or other forms of external ocular lues but I may, perhaps, remind you that even in our country the domestic treatment of chronic "sore eyes" by the application of the lingual tip to the everted lids and intermarginal space is not unknown.

Gumma of the Lid. This is also a rare alteration of the tissues not

*Read before the Chicago Ophthalmological Society, April, 1909.

always easy of diagnosis, but it ought not to disturb anyone in view of our much improved laboratory methods of detection. The *spirochæta pallida* is always found in the new growth.

In a case under my care last year, considerable destruction of the lid tissues occurred before the character of the lesion was recognized.

Conjunctiva. As is generally the case with mucous membranes, we have primary, secondary and tertiary involvements of the conjunctiva. Chancre, gumma, mucous patches and other syphilides are described. In my opinion, these affections, although not common, are often overlooked, especially the patches. The latter may readily be mistaken for an "acute conjunctivitis with formation of a false membrane." Of course, the only way to avoid errors of this sort is "eternal vigilance" and a search for the *spirochæta*.

Sclera. The older ophthalmologists believed the sclera to be immune from attacks of lues and, as a matter of clinical experience, we know that syphilitic lesions of the sclerotic are very rare. It is even a question as to whether some, at least, of the published cases (Mooren, Galezowski, Higgins, *et al.*) were not really tubercular. In doubtful instances modern means of diagnosis are at hand to decide the question.

Tarsus. Tarsitis syphilitica is not, perhaps, as uncommon as some authors would have us believe. It is, however, almost always associated with lues of other parts of the eye. I have had at least two genuine cases that plainly showed the usual thickening, œdema of the lid skin and discomfort on opening and closing the eye that rapidly disappeared under inunctions of mercurial ointment, large doses of iodides and local applications.

Lachrymal Apparatus. As is well known, both acute and chronic dacryocystitis may be luetic, but the most pronounced cases are those in which the bony walls of the sac or the nasal duct are the seat of a syphilitic periostitis or osteitis associated with or directly producing stenosis. One should, of course, always suspect the presence of syphilis in this form of nasal duct obstruction.

Cornea. Although there are doubtless other varieties of luetic keratitis, yet that form known as interstitial, parenchymatous, specific or strumous keratitis furnishes by far the most common form of luetic invasion. The disease is too well known to all of you to waste any time on a description of it; but, let me say in passing, if there be any one in my audience who has chanced to miss the golden opportunity of reading the pages of MacKenzie on this portion of my subject, he should seize it at once. He will find there a description of the clinical aspects of the disease to which nothing of importance has been added during the past half century.

The process is almost always seen in children, is uniformly hereditary and affects the middle and posterior layers of the cornea—the membranes of Bowman and Descemet. It rarely leads to loss of the anterior

epithelium, and is characterized mainly by a deposit of new material with the formation of vessels in the corneal substance. It is very likely due to lues in 75 per cent. of all cases. The great variations (50 to 97 per cent.) in the estimates of observers of large experience will probably now be excluded in future by our modern means of diagnosis.

Although the disease is extremely chronic, it has been noticed that it generally affects at first one eye—to attack the other later on. Bearing on this point, I once heard in the discussion of the disease by a foreign medical society a bluff Englishman reply to a pedantic, little questioner, who challenged the audience to furnish cases in which the fellow eye had escaped: "Yes, I have had two cases," said he, "but in both patients the other eye had been enucleated."

The infiltration, commonly known as "salmon patches," may deepen and extend until the whole cornea is covered with a large, dense opacity. A short time ago I saw a case that had been pronounced one of onyx, and I must say that the appearances and symptoms seemed to justify the contention, but, as we know, suppuration or even ulceration is an extremely rare incident in syphilitic keratitis.

The search for "Hirschberg" vessels in suspected cases of hereditary syphilis, has not been insisted upon as a means of confirming a suspicion of this disease as strongly as I think its value warrants. When we have a sign so easy of demonstration, that persists through life and is so constant a reminder of the general dyscrasia, it ought to be more generally employed in diagnosis. The internist should be informed that, on dilating the pupil and with the use of a lens, the vascular outlines can be readily distinguished in quite a few cases of hereditary syphilis.

Although Hutchinson and other authorities believe in the specific treatment of these cases I must confess that after many years of experience I have come to the conclusion that, on the whole, the use of mercurials and iodides is of little or no use. Indeed, I am convinced that thoroughness in the prescription of most of these remedies is harmful rather than helpful. Attention to hygienic measures—an outdoor life, change of scene, good food, tonics and the regulation of the patient's habits—are usually of much more importance. Even the syrup of iodide of iron, that is so often prescribed, owes its good effects, I believe, to the iron rather than to the iodine. Locally, it is manifestly difficult to lay down any general line of treatment. The pupil should be kept dilated with atropine, owing to the probability of iritis setting in sooner or later, and the acute symptoms (when any are present) should be combated by it, combined with hot applications and dionin. When the acute stage has passed, I have found digital massage of the cornea, with stimulating ointments, of some considerable benefit in producing absorption of the corneal deposits.

Both in consideration of treatment and of prognosis it must be remembered that behind the opaque cornea a uveitis may be going on that

can, in the course of weeks, or months, destroy the eyesight. Consequently, in all cases of interstitial keratitis one should inform the patient's friends that while the opacity in the cornea generally clears up and the patient often obtains useful vision as a result, the choroid, retina, optic nerve and other important internal structures of the eye may be so damaged that even if the opacification in the anterior segment subsides, the patient may yet be partially or completely blind from ravages of the disease in the posterior segment.

PERFORATIVE APPENDICITIS COMPLICATING PREGNANCY. WITH REPORT OF TWO SUCCESSFUL CASES.

By EDMUND A. BABLER, M. D., of St. Louis.

Recently three cases of perforative appendicitis complicating pregnancy have come to my notice. One of these was referred to my service at the Deaconess Hospital; the other two occurred in the practice of my colleagues. Of these latter, one was not operated upon; death occurred. One patient was subjected to Cæsarian section; a dead fetus was delivered; mother died.

In a previous issue of the *Journal of American Medical Association* (October 17, 1908, page 1310), I reported my first case and gave a tabulated report of all recorded cases. A brief synopsis of my first case follows:

CASE I. Mrs. S., aged 29, of Sapulpa, Oklahoma, was seen in consultation with Dr. Soliss. Examination showed patient in sixth month of pregnancy; a large appendiceal abscess was present. Patient was in quite good condition. Abscess was incised and drained. Forty-eight hours after operation patient miscarried. Infant lived a very short time. Mother made a complete recovery.

In the monograph referred to, the following conclusions were advanced:

1. Perforative appendicitis is one of the gravest complications of pregnancy with which the surgeon has to deal.
2. Appendicitis complicates pregnancy with greater frequency than the tabulated cases would indicate.
3. Pregnancy does not seem to predispose to primary appendicitis. It may precipitate an attack in certain chronic cases.
4. The clinical manifestations do not differ from those of appendicitis in the non-pregnant.
5. Before a diagnosis is made, the medical attendant must bear in mind the possibility of ureteritis and pyelitis. The diagnosis is not, as a rule, difficult.
6. Of 235 cases of appendicitis complicating pregnancy and the puerperium, 103 of the 207 cases complicating pregnancy were of the perforative variety. Of these perforative cases, 89 patients were operated on; 33 aborted before and 37 after operation; 36 mothers died.

All of the 14 patients who were not operated on in perforative cases died; 9 infants died. Of the 104 non-perforative cases, 50 patients were operated on; 7 aborted and one mother died. Of the non-perforative, non-operated case, 6 patients aborted and 4 died. (These were mild attacks.) Of the 28 cases occurring during the puerperium 18 were

perforative. Of these latter, 12 patients were operated on; 4 died. Two of the five not operated on accidentally recovered; the abscess ruptured into the rectum. All of the patients in the non-perforative cases recovered.

7. The morality of appendicitis complicating pregnancy is the mortality of delay.

8. Early, efficient surgical intervention is the secret of success in the treatment of appendicitis complicating pregnancy.

9. It is far better to evacuate an appendiceal abscess before emptying the uterus, since such a procedure would eliminate the possibility of flooding the free peritoneal cavity with pus.

10. If general peritonitis is present at time of consultation, accouchement force, followed by abdominal section, is indicated in the cases near the end of gestation. Cases have been reported in which general peritonitis was present at the time of operation, and yet the patient went to term.

CASE II. Mrs. H., aged 27, was referred to my service at the Deaconess Hospital by Dr. Lewis. She gave the following history: Mother of four healthy children; last confinement occurred three weeks ago. During eighth and last months of pregnancy she had frequent attacks of more or less severe excruciating pain in right inguinal and umbilical regions. The pains were cramp-like in character and were always to right of median line. The midwife whom she consulted stated that she had ovarian trouble. On the day of confinement the pains in right side of abdomen were excruciating and the attacks more frequent than those previously experienced. Immediately after delivery she suffered a chill, followed by a temperature of 104. On the day following delivery, a second chill followed by vomiting, abdominal distention and high temperature, were noted. The family physician was then called. The illness progressed from bad to worse until the end of the third week when I saw her.

Examination of patient revealed her to be in a septic condition; complexion waxy; pulse rapid and weak; temperature 102. A semi-solid, painful mass about as large as a cocoanut was found in right inguinal region; bimanual examination revealed mass to be immovable; uterus seemed to be drawn upward and toward the right. Just over the left half of sacrum was found very painful, fluctuating mass as large as two doubled fists. There was a leucocytosis of 13,580. Urine contained slight amount of albumin.

The abscess in region of sacrum was incised under local anesthesia, and about a pint of slightly offensive pus was evacuated. After evacuation of this abscess, the mass in right inguinal region did not become any smaller. I did not believe that there was a connection between the two.

Two days after entrance into hospital patient was etherized and a median laparotomy performed. A peculiar condition of affairs was found. In the right inguinal region was an oval, semi-solid mass as large

as a cocoanut. The uterus was drawn upward and to the right and formed the inner wall of this mass. The head of cecum was lost in the mass. The right tube and ovary assisted in forming the inner wall of sac. The left tube and ovary were apparently normal. The mass was adherent to the abdominal wall just below McBurney's point. Gallbladder was free from stones. The cul-de-sac was free from abnormal content. I felt sure the mass in right inguinal region was an appendical abscess.

The median incision was immediately closed in layers. An incision was then made just above and an inch internal to anterior superior superior spinous process of right ileum. The pus sac was incised and contents evacuated. A large drainage tube was inserted, dressings applied and patient returned to bed. Normal saline solution was administered per Murphy technique. The patient rallied better than we anticipated. Median incision healed by primary union. The two pus cavities discharged for several weeks; they were irrigated daily after operation until the discharge had almost disappeared. Patient left the hospital four weeks after operation. It is now three months since the patient left the hospital. She is in excellent health.

My second case exemplifies the possibilities of nature. Further experience has but tended to confirm the correctness of the conclusions advanced in my previous monograph.

SPECIAL ARTICLE.

INDISCREET CHAPTERS IN HISTORY.

(Les Indiscrétions de l'histoire.*)

By DOCTEUR CABANES.

Translated by Dr. Philip Skrainka.

CHAPTER I.

LOUIS XI.

JUDGED BY HISTORY BUT EXPLAINED BY THE SCIENCE OF MEDICINE.

In the year of Grace 1463 "the stone-cutters and sculptors worked in marble and stone, under the gallery of the court-yard of the Lion's Fountain, on the monument of the late King Charles, dead in the palace of the queen near the palace of St. Paul."** Charles—it was Charles VII.—had been dead already two years; but the delay in fashioning his monument can easily be explained when one recalls that during his life no one had dared to mention its plans and cost to him. For the son of Isabeau of Bavaria had inherited from his mother obsessions and phobias that could not fail to aggravate the sort of life he led. This royal neuropath, this agoraphobic and anthropophobic, was hypersensitive as regards motives; he apprehended the slightest cause of an emotion, and the one that he most dreaded was the thought of death, fearing always, says one of his historians, "to die by the sword because he was present at the death of Duke Jehan (John the Fearless)," massacred under the eyes and at the instigation of the Dauphin who later mounted the throne of France. This tanatophobia, or as we should say the better to be understood—this panophobia of Charles VII. recurred in his son, the future king, Louis XI.

* * *

Louis XI. is a sovereign who to be understood must be judged from the standpoint of psychiatry. Mental pathology reclaims this crafty monarch, for if he is an enigma in history it is because history has thought itself capable of doing without the aid of medicine.

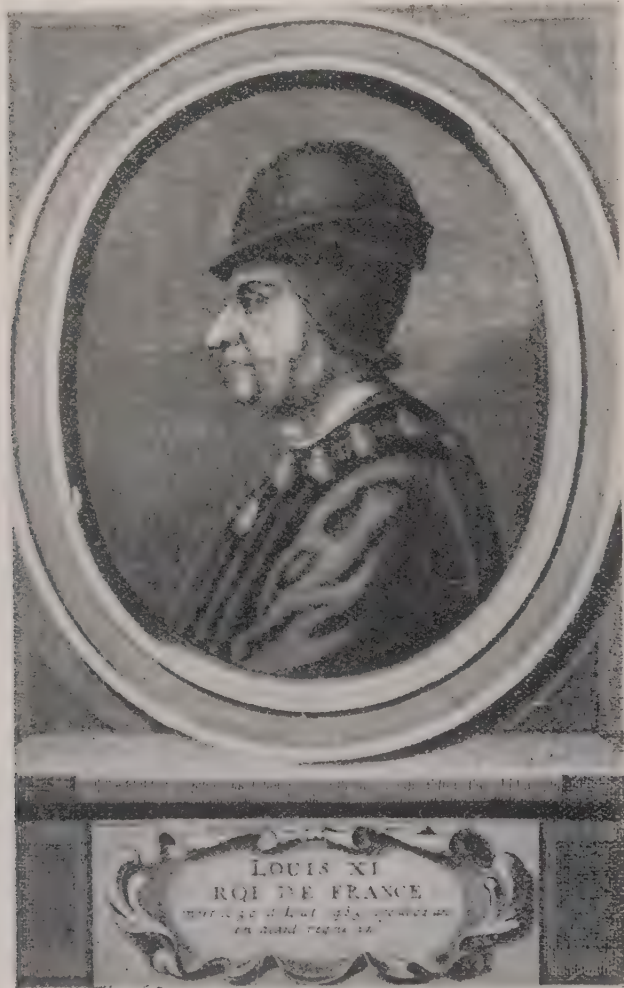
More than any other holder of the sceptre, Louis XI. lends himself

*Paris: Albin Michel. 1909.

**Sauval, *Antiquités de Paris*, t. II., p. 373; following the customary reports of the provostship of Paris.

to analysis, though at first sight he seems to defy it on account of the mélange that he presents of a perfect surety of decision, an inexhaustible activity, and a stupefying amorousness, with manifest propensities to the strangest beliefs and the most absurd practices.

"This statesman, so reflective and penetrating, this ingenious and cunning mind, so sensitive and acute, believed nothing except what he



wanted to believe, neither moral laws nor conscience; nevertheless he had faith in the most ridiculous superstitions peculiar to coarse and ignorant men. His religion was decidedly inferior to that of the Middle Ages, and like the old Merovingian kings in barbarous times, he made his vows to the Virgin and the Saints of Paradise, by bestowing the richest gifts on the churches which were dedicated to them, in the hope of gaining their support in his most dishonest enterprises. Mindful of

his mental independence even in his superstitions, he did not submit to the least influence on the part of the clergy."*

Have we here sufficient evidence to class one of the greatest kings of which France boasts in the category of the semi-insane? Should our deduction be that at certain moments Louis XI. had a veritable "intellectual functional miopragia?" All depends on the significance of the term semi-insane, which, thanks to Grasset, has to-day quite an unexpected vogue. Let it pass for semi-insane, if by semi-folly we understand "the inequality in the development of divers psychic centers;" if we admit that these semi-insane are capable of rendering to society better service than the more ponderous brains, and better equilibrium than is ordinarily considered normal. As regards the men who have manifested a psychic activity of which history has offered some extraordinary examples, is it not good logic to reason that "when some cerebral centers work exaggeratedly, others must weaken; the first draining a quantity of blood from the latter, which thereby suffer from deprivation?"**

* * *

Son and grandson of neuropaths, Louis XI., by virtue of the laws of morbid heredity, was fatally dedicated to neuropathy, if heredity is the intangible dogma which is to-day accepted without reserve.†

Leaving aside all anamnesis, whether hereditary or personal, let us attempt to establish the psychic formula of this king who is ordinarily pictured in history as a cruel despot without scruples, and who was—there is too great a tendency to forget it—one of the founders of French national unity.

To appreciate the mentality of a sovereign, such as was that of Louis XI., it would be well to note, at first, the physiological therapeutics of the time as well as the medieval pathology, before sitting in judgment on the case in the light of modern neuropathology. By reason of the adage *naturam morborum ostendunt curationes*, would not a knowledge of the treatment inflicted on the royal patient help us to ascertain beyond a doubt the nature of the malady which afflicted the king? This method, be it said, has verified the hopes which were advanced,†† and the results are worthy of record.

* * *

During the year preceding the last of his life, Louis XI., who clung desperately to life despite the fact that many remedies had not helped him, thought it would be beneficial to receive a visit from the shepherds of "the country of Poictou," and from another district where "a great number of bigots of both sexes, and people of devotion as well as hermits and saintly creatures, had unceasingly prayed to God to spare

*Henri Martin, Hist. de France.

**J. Daufaur, la Névrose de Louis XI.; thèse de Toulouse, 1907.

†Quelques résultats de l'examen des preuves historiques employés par les auteurs traitant de l'hérédité, par le docteur Nœgeli Akerblom, 2^e édition. Genève, 1905.

††This is mentioned by Aug. Brachet in his very remarkable work on the "Pathologie mentale des rois de France."

the king's life."* The presence of the hermits needs no explanation, but what function did the shepherds fulfil?

The same chronicler continues thus in the passage from which we quoted only a part: "At this time the king received a great number of players of low and sweet instruments, whom he lodged at St. Cosme near Tours, where they assembled to the number of one hundred and twenty." The shepherds often played before the king's lodgings "in order that the king would derive some pleasure and pastime, and *to keep him from sleeping*." Do not we glean clearly from this text what has since been recognized—namely, the moderate and sedative, and at the same time, anti-hypnotic action of music? or, in other words, a prophylactic of diurnal sleep? Does not all this signify the necessity of the precaution of resorting "to low and sweet instruments" in the therapeutics of nervous maladies, since, on all hands, we have evidences to-day of the beneficent influence of melodies in a minor key?***

* * *

Two years before trying musicotherapy, there were ordered by the king from different parts of the country, notably from Provins, Montbazon and other places, messengers charged to bring roses, mint, rosemary and sweet marjoram, violets and eglantine, in order to paper with them "the chamber and the retreat" of the king. Now the Arabic doctors,† as well as those of the Middle Ages,†† recommend against melancholy and epilepsy the use of odoriferous plants.

Was Louis XI. afflicted with epilepsy (morbus comitialis)? Such a conclusion would be premature. But various documents attest that the royal invalid had submitted to cauterizations by the red-hot cautery and encephalic scarifications for attacks of vertigo, of which he was the victim. Of what nature were these attacks of vertigo? The royal patient was given potable gold,‡ medieval medicine prescribing it in psychoneuroses, and now reinstated in our pharmacopeias as an antispasmodic. If we note that the king followed the hygienic directions of his doctors against spasms,—that is to say, he slept with his head lying high and had it protected in order to avoid a coldness of the cranium, because this state was inductive of sleep,—we shall be nearer an understanding of the morbid cause which we have touched upon. It was in fact on the authority of Hippocrates‡‡ that the notion arose in the time of Louis XI. that sleep in excess was a provocative cause of epilepsy;

*Journal de Jean Roye ou Chronique scandaleuse, éd. de B. de Mandrot, t. II., p. 122, ann. 1482.

**This has been confirmed by modern physiologists (Binet et Courtier, *la Vie émotionnelle*; Labor. de Psych. physiol., 1897, p. 104).

†Avicenna, Canon Medicinæ, libellus de removendis nocumentis, vols. I. and II.

††Bernard de Gordon, Lillium medicinæ, II., 25

‡Therefore, thou best of gold art worst of gold;

Other, less fine in carat, is more precious.

Preserving life in medicine potable.

—Shakespeare, Henry IV. (Translator).

‡‡Hippocrates, Works, édit Littré, vol. V.

hence, an epileptic should not fail to have his head well covered. The favorite prescription, moreover, in this malady, was to use means to warm the brain and keep it dry; from which arose the necessity of cauterization so as "to vaporize the humors."*

* * *

The king then had only conformed to a current practice for the cure of epilepsy. But all the remedies which were administered remained useless; in vain were new medications employed. "Day after day Louis grew worse and no profit was his from the medicines administered in a marvelous manner."** Desperate and heroic measures were called into play "because the king vehemently hoped to acquire health by means of human blood, which he sucked and drank from infants." Are these "the terrible and marvelous medicines" of which certain annalists speak in no dubious way? and which others have passed completely over in silence and for very good cause? Was this a caprice on the part of the patient or a sign of sanguinary sadism? Did he wish to regain youth or a restoration of his declining strength? Who can reckon the number of fantastic interpretations which may thus be demonstrated!

Whether we prejudge, or whether we draw inferences from these observations, the fact is unvarying; in antiquity,† and in our days,†† human blood that is still warm is thought by the laity to be a cure for epilepsy. Opening a pharmacopeia of the eighteenth century,‡ you may read there: "All the authors recommend human blood in the cure of epilepsy." Hence, the clinician is able to decipher what has remained a closed chapter to the physiological as well as to the dogmatic historian.‡‡

*Guy de Chauliac, édit. Nicaise, 1890, p. 593; Albucasis, trad. Leclerc, 1861, etc.

**Robert Gaguin, édit., 1560, ann. 1482, fol. 281.

†—Celsus, 111., 23; Pliny, XXVIII., 2.

††*Le National*, of May, 1845, published an account of the execution, at Stockholm, of a man condemned to death, noting in particular the torment of an old woman who, afflicted with epilepsy, stood at the foot of the scaffold ready at the moment the head was separated from the body, to thrust into the blood, while yet warm, a morsel of bread, the eating of which she hoped would cure her.

‡Pharmacopée royale, galénique et chimique, par Moyse Charas, édit. de 1773, vol. II, p. 418.

‡‡See particularly Anquetil, Lacretelle, Henri Martin, Michelet, etc.

(TO BE CONTINUED.)

MEDICAL AND SURGICAL PROGRESS.

THE SURGICAL TREATMENT OF THE PARALYSES.

A REVIEW OF RECENT LITERATURE.

By NATHANIEL ALLISON, M. D.

1. A COMMUNICATION ON NERVE SURGERY, WITH A PRELIMINARY REPORT ON THE ANATOMICAL HEALING OF NERVE WOUNDS.—Bardenheuer (*Deut. Zeitsch. f. Chir.*, 1908, XCVL., 24).
2. TREATMENT OF CEREBRAL PARALYSIS.—Rothmann (*Ther. der Gegenw.*, May L., No. 5, pp. 217-264).
3. A NEW OPERATIVE METHOD OF SPASTIC PARALYSIS BY MEANS OF RESECTION OF THE POSTERIOR SPINAL NERVE-ROOTS.—Foster (*Zeit. f. orthop. Chir.*, XXII., Bd. 1-3, heft, 1908).
4. SUCCESS IN THE TREATMENT OF GRAVE INFANTILE PARALYSIS.—Vulpus (*Muench. med. Woch.*, 1908, p. 2662).
5. NERVE TRANSPLANTATION.—Kuettner (*Deutsch. med. Woch.*, 1908, p. 2196).
6. THE TECHNIC OF ARTHRODESIS OPERATIONS.—Bade (*Zeit f. orthop. Chir.*, XXII., B. 1-3, 1908).

Bardenheuer's paper is based upon the experience gained in the treatment of 43 cases in which he operated upon the nerves, 8 of these being plastic operations. He believes that nerve defects are bridged over chiefly through the outgrowth of fibrillæ from the central stump. In order that a nerve may have its function, its continuity with the ganglion cell and its nourishment by blood are necessary. Wherever there exists a circular constriction of nerves and blood vessels from non-inflammatory cicatricial tissue, the conductivity of the nerve is interfered with. Conductivity is also impeded when there is marked and continued pressure upon nerve fibres. Pressure is dangerous when the nerve cannot escape; that is, when it works concentrically upon the nerve and arrests the influence of the ganglion cell. Here degeneration of the peripheral portion follows. Inflammatory material and extravasated blood will produce this pressure. It is highly important to promote good circulation of blood in the region of effected nerves following an operation. The author has found that function may return in from 5 to 20 days. This is exceptional, and suggests that there is probably a previously established anastomosis between the peripheral stump and the neighboring nerve, or between two nerve stumps. Though healing appears to take place clinically by first intention, it is impossible to demonstrate this histologically. Transplantation of entire nerves or by nerve flaps from an intact or slightly paralyzed nerve will often give return of function. It is also advisable to transplant from a sound nerve, the function of which

is not important. For instance, the hypoglossal is to be preferred to the spinal accessory and the obturator to the crural. It is well also to transplant tendons and shorten paralyzed muscles as well as to cut sound muscles and tendons as an aid to the nerve grafting. In this connection, too, it is well to shorten muscles so that they will be left taut and will contract upon the slightest voluntary impulses. In old traumatic paralysis, with node formation at the site of the lesion, the electrical examination must decide the treatment after exposure of the nerve. If there is no reaction to electrical stimulus on all sides of the node, then the node should be excised and the cut ends sutured together. When reaction is present, an incision should be made through the sheath of the nerve, the blood clot removed, and the nerve sheath sutured. After excisions of the elbow, hand and knee, there may occur without injury to a nerve or ischemic palsy from a tourniquet, an almost complete paralysis of the muscles. This is due to too great shortening of bones and the relatively too great length of muscles, resulting in a lack of nourishment of nerves. The author believes that all nerve pressure palsies should be operated upon in two weeks' time after the onset of paralysis where the nerve gives the reaction of degeneration. It is possible then to free the nerve from hematoma or to cure its lesion. Suture should be made directly through the nerve with fine cat gut. Restoration of function after nerve operations may be a matter of a few weeks, months or years.

Rothmann, in his article on the treatment of cerebral paralysis, says that there should be three phases to the treatment: First, treatment should be directed against the incipient flaccid paralysis; secondly, it should aid the restoration of motor functioning, and finally, should be directed against what is left of hemiplegic paralysis. The head should be kept still for a few days after the stroke and the position of the arms and legs should be carefully overseen. These individuals have a tendency to turn on the paralyzed side and thus compress the paralyzed members. This should be prevented and the limb should be subjected to passive movements from the very beginning. Massage helps materially in promoting the process of restitution, and as soon as active movements have appeared they should be exercised guardedly and should be extensive, coördinated ones, not single movements. Stimulation of the cortical vasomotor centre, cultivation of still existing connection with the cortex and of the innervation of different groups of muscles of the arms and legs, lead to good results following cerebral paralysis. This article is of interest in its suggestions as to the earlier treatment of cerebral paralysis. Foster's paper takes up the treatment of these conditions in their later stages, and his suggestion is one of considerable importance. His operation is based on the fact that in spastic paralysis we have a pathologic intensification of the reflexes, originating in a sensory irritation of the skin, joints, ligaments and especially the muscles. These pathologic influences pass from the posterior nerve-roots into the gray matter and thence into the anterior horns and the reflex is completed through the motor nerves into the muscles, thus fixing the limbs in their position and resisting stretching. This condition is present in the normal, but the normal fixation is less marked because the cortex continuously exerts a restrictive influence through the pyramidal tract on the spinal reflexibility. Where this influence is inhibited the spinal reflexibility reaches an extreme degree. His proposition is to suspend the spastic contracture by dividing a link in the reflex arc, this means sections of the posterior nerve-roots, as the peripheral nerves contain sensory fibres and the spinal cord is an inoperative field. The technic of

operation consists of laminectomy from the second to the fifth lumbar vertebræ and the beginning of the sacral lamina, of opening the dura and resecting the proper nerve-roots.

Following this suggestion Professor Tietze has operated upon 4 cases: The first was a marked paraplegia as a result of a congenital bilateral defect of the upper third of the central convolution. The result showed the disappearance of contractures and about normal passive movability. The second case was Pott's disease of the cervical vertebra. The result here was not so good as the first case. The third case was one of Little's disease with resulting improvement. The fourth case died from an injury done the cauda equina.

Vulpus has demonstrated 12 cases of severe infantile paralysis which he has treated by myomectomies, osteotomies, arthrodesis, transplantation of muscles and tendons, excision of bones, etc. Operation proved of advantage in all of these cases, and Vulpus is of the opinion that no case is too severe to be operated upon as several of his cases were only able to move themselves by their arms. These he enabled to walk upright. It is his opinion that fixation apparatus should be used as an adjuvant to operative methods.

Kuettner has taken a piece of the peroneal nerve and tibialis from an amputated leg and transplanted it into a median nerve after excision of a tumor of the median nerve. The result was a recovery.

Bade has written a paper on the technic of arthrodesis giving as general considerations; first, proper asepsis, and second, proper approximation of bone. Shortening should be avoided as much as possible when the knee is operated upon. The foot is not of necessity to be completely anklyosed. He favors a small amount of motion here as it gives a more or less elastic gait, but the arc of motion must not be sufficient to permit the foot to drop back into equinus.

THE TONSIL QUESTION.

A REVIEW OF RECENT LITERATURE.

By WM. B. CHAMBERLIN, M. D.

The question of the advisability of removing diseased tonsils seems to have been definitely settled. The method of removing them of late has claimed no little attention, as is shown by a perusal of the more recent literature. For years the operation of tonsillotomy, *i. e.*, the removal of the part projecting beyond the faucial pillars, was the operation of universal choice; but of late this older operation seems likely to be supplanted by the more modern and to us more surgical operation of tonsillectomy. This change in attitude seems to spring from satisfactory and logical reasons.

Tonsils may be pathological simply from their size alone, interfering with respiration, deglutition and the proper aeration of the tympanic cavity. Such tonsils are seen most frequently in children where they are usually associated with marked increase in the adenoid tissue or Lushka's tonsil. They occur less frequently in adults. But it is not always the hypertrophied tonsil which carries with it the greatest menace to health and danger to the individual. Often the imbedded and densely adherent tonsil is the tonsil of greater danger. It is the portal of entry of bacteria of all sorts, especially the tubercle bacillus, as has been shown by the investigations of Wood, Ravenel and others.

The tonsil is bounded fore and aft by the pillars of the fauces and externally by a dense fibrous capsule which rests upon the superior constrictor of the pharynx. The crypts are eight to twenty in number. They open on the internal and superior surfaces and pass for the most part to the capsule.

Why should the older and simpler operation of tonsillotomy give way to the more recent and infinitely more difficult operation of tonsillectomy? The operation of tonsillotomy is incomplete. We might liken it to an appendectomy in which only the distal part of the appendix is removed. Recurrences of inflammatory attacks following such an operation are common, so that patients have grown skeptical in regard to the benefits derived from the operation while operators have grown more guarded in their promises as to ultimate cure. If the tonsil is large and not adherent to either pillar it might be possible to remove it in its entirety, gland including crypts and capsule, with the tonsillitome. But such a tonsil is a *rara avis*. The infinitely greater number, as the result of one or several attacks of inflammation, are adherent in varying degree to one or both pillars. The part projecting beyond the pillars constitutes but one-eighth to one-half of the entire gland. It may in the quiescent state following an attack of tonsillitis not project beyond the pillars at all. In such cases the tonsillitome would remove but a small part of the diseased gland—it might fail to remove even a small portion. With

seven-eighths to one-half of the tonsil remaining *in situ* after tonsillotomy, it is little wonder that patients suffer from recurring attacks of tonsillitis following operation. The surface becomes sealed over with bands of cicatricial tissue and the patient, according to Jackson, is more disposed to attacks than before.

The true size of the gland is often surprising. This may be revealed by traction on the tonsil, or by causing the patient to gag. After the removal careful examination will show whether the enucleation has been complete or not. The capsule should be intact and a probe introduced into any of the crypts should not pass through, but should stop at the capsule. The fossæ should also be examined carefully to see that no tags of tonsillar tissue have been left behind.

Tonsillectomy, like tonsillotomy, can be performed under general or local anæsthesia. Under local, the tonsils are first painted with pure cocaine dissolved in adrenalin until superficial sensation is abolished. A few drops of a one per cent. cocaine solution, to the drachm of which five to ten drops of adrenalin have been added, is then injected outside the capsule by plunging a special long hypo needle through the pillars. Anæsthesia and anæmia are complete almost immediately.

For general anæsthesia ether is safest and should be the anæsthetic of choice, notwithstanding its disadvantages of nausea and increased flow of saliva and mucus. The mouth should be held open by a suitable gag. The operation may be performed with the head on the side or hanging over the end of the table in the Rose position, while the operator sits facing the top of the patient's head. My own preference is for this position. The tonsil is seized on its anterior surface and some traction exerted. This will give one an idea of the true size of the gland and will also differentiate the anterior pillar. By means of scissors, straight or curved, an incision is made through the overlying mucous membrane just inside the pillar until the glistening white capsule comes thoroughly into view. By means of scissors, or largely by blunt dissection, the tonsil is now freed from its lateral and superior adhesions until it is attached externally by a narrow pedicle covering its lower two-thirds. While the tonsil is drawn well into the throat this pedicle is then severed by knife, scissors, tonsillitome or snare. The snare possesses the advantage of following close outside the capsule and causing less hemorrhage. Jackson condemns its use on the grounds of there being greater danger of secondary hemorrhage, but the snare seems to be gaining in favor with an increasing number of operators.

The chief objections to the complete enucleation are the difficulties attending the operation and the greater danger of hemorrhage. That the operation is difficult cannot be denied. This, however, can hardly be urged as an objection, if the necessity of removing the entire gland is truly appreciated. It should remove the operation from the hands of the ill-prepared and incompetent and place it in the category of operations requiring special skill and training. Such an operation requires first of all a good operator, second a good assistant and preferably adequate hospital facilities. The danger of hemorrhage has been too little appreciated in tonsil surgery. Any operator attempting to do such work should expect an occasional hemorrhage and be prepared to cope with it. Most operators are now agreed that the danger is fully as great in the one case as in the other. In tonsillectomy the point of safety lies in keeping close to the capsule and in not encroaching upon or lacerating surrounding tissue.

CONCLUSIONS.

I. Tonsillotomy may give relief in certain cases, but tonsillectomy offers the greatest promise of cure.

II. There is no greater danger of hemorrhage in tonsillectomy than in tonsillotomy. There is always a danger of hemorrhage in any tonsil operation.

III. Any method is a good one so long as it aims at complete removal. The choice of method is largely a question of individual skill or preference.

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PSYCHO-ANALYSIS AND ASSOCIATION TESTS IN THE TREATMENT OF NEUROSES.

A REVIEW OF RECENT LITERATURE.

By SIDNEY I. SCHWAB, M. D.

1. PSYCHO-ANALYSIS IN PSYCHOTHERAPY.—Jones (*The Jour. of Abnormal Psychology*, Vol. IV., No. 2).
2. THE PRACTICAL VALUE OF THE ASSOCIATION TEST.—Bailey (*The Amer. Jour. of the Med. Science*, September, 1909).
3. A CASE OF SCHIZOPHRENIA (Dementia Praecox), AN ANALYSIS.—Brill (*The Amer. Jour. of Insanity*, Vol. LXVI., No. 1).
4. DIE VERWERTBARKEIT DES ASSOZIATIONSVERSUCHS FÜR DIE BEURTEILUNG DER TRAUMATISCHEN NEUROSEN.—Potozky (*Monat. für Psychiatrie und Neurologie.*, June, 1908).
5. UEBER ASSOZIATIONSUNTERSUCHUNGEN, BESONDERS SCHWACHSINNIGER KINDER.—Wimmer (*Monat. fuer Psychiatrie und Neurologie*, February, 1909).

What seems to be the most important advance in the knowledge and treatment of hysteria and allied conditions is to be found in some of the recent work on these subjects. The papers are largely the outcome of Freud's earlier work on hysteria. The psychotherapy, of which so much has been written and which has been so largely read, represented at first a crude form of therapy easily appreciated by both physician and layman. It was, and is, a surface therapy concerned little with underlying causes which are hidden from superficial examination. It had largely to do with the attempt to modify conditions as laid bare by a patient's open recital of such facts as appeared to him to be at the bottom of his trouble. This data obtained largely by means of direct questions and answers, a free confession as it were, formed the only object of therapeutic attack open to the examining physician. That there was a much more intricate process underlying the systematic picture of many of the neuroses was long admitted, and it was likewise believed that if this hidden territory could be reached then the most effective therapy could be applied. That psychical symptoms were the result of a largely involved and little understood mechanism has always been believed, and the first step towards unraveling the problem seems now to have been reached. Neurological literature at present contains many papers on psycho-analysis and association test experiments, and it is the object of this review to mention a few of the more interesting in which these subjects, now becoming very familiar, are dwelt upon.

Ernest Jones (1), perhaps the foremost advocate of the advanced schools of psychotherapists in this country, in a paper read before the American Therapeutic Society, explains very clearly how from the original Freud hypothesis, advanced some fifteen years ago, has developed a system of therapeutics, which is without question an enormous

addition to our power in the treatment of this class of disease. By means of psycho-analysis a deeper insight is sought into the essential nature and origin of the morbid phenomena with a view to obtain a fuller understanding of the aims of treatment, and so achieve a greater precision in the application of it. The method is based on the knowledge that the symptoms present in the psycho-neuroses owe their origin to a conflict between two groups of ideas or mental processes which cannot be brought into harmony with each other. One complex of mental processes is for some reason or other of such a kind as to be unacceptable to the main body of the personality. The personality fails to assimilate it, will have nothing to do with it, tries to forget it, to submerge it, to repress it. The repressed complex then takes on an automatic existence, and acts as an irritating foreign body in the same way as any physical foreign body that has not been absorbed. From this point of view we may define the pathology of the psycho-neuroses as a defect in assimilation. In fact, enabling the patient to discover and appreciate the significance of the mental process that manifests itself as a symptom, is the central aim of the psycho-analytic method.

Pearce Bailey (2), in a paper entitled "The Practical Value of the Association Test," describes in a very clear way the place which this method takes in connection with the previously described psycho-analysis of Freud. The association test or experiment was converted into a practical aid in diagnosis when Jung described that a lengthening of the association time gave a clue to the subject's past emotional experiences. Of course, prior to Jung's use of this method, association tests of various kinds were performed, especially by the students who had worked under Wundt; but the point of practical application came into the experiment when it was found that words associated with past and very often forgotten experiences connected especially with strong emotional tone would delay the associated word in a very definite and marked manner. The method is as follows: A list of one hundred words is printed on a pad and so distributed that there is an alternation of nouns and adjectives, and every fourth word a verb. These words are printed in a vertical column, and between every three or four of them a space is left, so that if there seems to be a need of a word not on the printed list, it can be written in. Each word is numbered, so that it can be referred to by number without pronouncing the word. On the same horizontal line as the number and the word three spaces are left—one for the time record, one for the reaction word, and one for the reproduction, or the response which is given on the second trial. If the reproduced reaction is identical with the original reaction, it is indicated by +. The method is explained to the patient, and the words are then read to him. This may be done by the physician, but is better done by some third person. The association time is taken by a 1-5 second stop watch, and it and the reaction word, or the first word spoken by the subject in response to the stimulus, is entered in the space reserved for it. The second trial, or reproduction, generally necessary for suspicious words only, should be delayed for at least twenty minutes. Failure to reproduce has been shown to be evidence that the stimulus word has touched upon a complex. The sheet containing all the facts becomes a permanent record. The test gives its most brilliant results when it brings to light an emotional experience which is no longer a factor in the conscious life of the individual, but which, nevertheless, has started a chain of persisting symptoms. Ordinary history taking can hardly hope to reveal such buried psychic causes.

By means of the association tests hints as to the past emotional experiences of the patient can easily be obtained, and by following these up by the analytic method of Freud it is possible to unravel and discover the origin of symptoms that would otherwise remain obscure. It is not necessary in order to make use of these two methods to accept fully Freud's theory that sexual traumas in childhood are the main-springs of hysteria; but Freud's teachings have been of great value in pointing out that painful emotional experiences in children are responsible for many neurotic symptoms which can only be overcome when the cause of them, long since perhaps passed from conscious memory, has been fully brought into consciousness.

Bailey (2), in his article describes a number of interesting cases in which the association test plus the analytic method brought the physician into absolute touch with the origin of the symptoms. The association tests are based evidently on so deep-rooted a psychological law that Jung believes firmly that the facts brought out by its employment cannot be affected by fraud and malingering. In this way the test can be used to unravel the origins of symptoms which the patient himself may try his utmost to conceal. Jung's original case was a medico-legal one, and the association experiment aided in the proof of stealing.

A. A. Brill (3) submitted a case of dementia-praecox to a psycho-analysis, the main features of which were dullness, apathy, somnolence, and perhaps hallucinations, as shown by the patient asking for a white horse. This condition continued for four days, after which he gradually became brighter. At the end of a few days he was apparently his former self. He was discharged from the hospital and went home, with the diagnosis of dementia praecox. In the ordinary run of such cases, in most of our insane hospitals, such facts would be left standing without any attempt at explanation, and according to the school of Kraepelin, the individual side of such a case would not be considered worth while investigating. It is obvious that if we are to understand anything at all of symptoms in mental diseases, it must be by some means of getting at the origin of delusions and other features common to this class of cases. In this case in point a hundred associations were taken and they formed the basis of further analysis by the Freud method. In an abstract of this kind the details of this investigation can not be given, but it was found that by following the associative words, the utterances of which were prolonged in the association test time, it was not a very difficult matter to reach the origin and the development of the whole hallucinational and delusional symptoms group. Brill concludes his paper by stating that after the analysis had cleared up the symptoms of this patient's condition and utterances have a reason for following the same course as that of any normal individual. Indeed, those who make use of the psycho-analytic method are well aware of the fact that whenever the patient's mind can be entered, he ceases to be an enigma and his senseless actions and utterances cease to appear senseless. On the contrary, we are often struck with the purposeful ingenious construction of the whole scheme. An interesting further conclusion of Brill is that in that class of cases in which the diagnosis of dementia praecox has been made, and which are mentally alert enough to be investigated by these methods a closer study has shown practically no trace of dementia. It is for this reason that the Zürich School, chiefly through the work and influence of Prof. Bleuler, repudiates this meaningless term "dementia praecox" and uses instead "schizophrenia."

Carl Petosky (4) makes use of the association test in the determina-

tion of traumatic neuroses. He submitted a number of cases to the association test and comes to the conclusion that it is of great value in determining traumata in cases of suspected traumatic symptoms, whether they are the result of malingering or not. It certainly seems a great aid in this class of cases if we can determine the truth in regard to the reality of the symptoms. and can exclude malingering in cases where there is a strong motive in the way of damages.

August Wimmer (5) writes interestingly on the subject of association test in cases of mentally deficient children. This paper contains a great many interesting psychological experiments, in which the laws of mental association are carefully studied. The author finds a very marked difference between groups of normal children and groups of mentally deficient children.

CORRESPONDENCE.

PARIS LETTER.

By AUGUSTE A. HOUSQUAINS, M. D.

IS SYDENHAM'S CHOREA AN ORGANIC DISEASE?

At the Congress of French alienists and neurologists, which recently held its sessions at Nantes, the question of chronic chorea was made the object of very interesting communications and discussions. Especially were the differences and analogies which either separate or bring closer together Huntingdon's chronic chorea, and the chorea of infancy or Sydenham's chorea, subjected to the light of criticism. The former, recognized to-day as an organic malady, depends above all on diathesis and heredity; while the latter is to some extent considered accidental. Many authors regard Sydenham's chorea as a neurosis. Such, however, is not the opinion of M. André-Thomas. Though proof of its organic nature, says he, is not as easy to show as in chronic chorea, the neurosis of Sydenham's chorea ought not to stand, for any length of time, in the way of the conscientious examination of facts. The arguments advanced by M. André-Thomas in support of his thesis should surely come in for some recognition.

In analyzing his observations of ten cases, which all clinicians would certainly have diagnosed as Sydenham's chorea, he notes the symptoms of organic lesions and of the central nervous system. In the beginning the muscular strength is reduced on the side where the chorea predominates; this hemiparesis is so well marked in the upper extremities of the body that it is easily observed, whereas in the lower extremities it is sometimes necessary to search for it. The disturbances of the muscular tonus are habitual and invariably constant; they are characterized by hypotonia.

Hypotonia is easier to detect in the upper extremities than in the lower. In an upper extremity, the hand is easily brought back to the shoulder, just as in the hemiplegics (Babinski), after flexion of the elbow, the same can be done, though more rarely, resulting in a hyperflexion of the forearm on the arm. The elbow brought back behind the head is brought nearer to the attachment of the neck; and the shoulder is often lowered. In a lower extremity, when the thigh is flexed at right angles to the body, the foot is more easily brought in contact with the buttocks. Hypotonia has also been studied by Bonhoeffer and Hey.

Hypotonia predominates in certain muscles; for example, in the supinators of the upper extremities. The phenomenon may manifest itself in a hemiplegic, following the movements named after Babinski. After having flexed the forearms on the arms, the arms and hands being

supinated, the muscles tense, the hands are quickly made to ascend by a series of little taps. Then will be seen that the hand on the side most affected will be pronated, while the other will remain supinated. The phenomenon of pronation is produced again when both arms have been elevated simultaneously; the hand on the most affected side will be observed to be more pronated. This is seen even better when the arms are hanging down and swinging the full length of the body, since one of the hands is so much more pronated than the other that it presents its entire dorsal surface. The same position is sometimes taken for a short time while walking, or kept up altogether.

Synkinesis of an upper extremity, or associated movements, occurs almost constantly. When a child attempts to squeeze very hard with the less affected hand, one observes a similar energetic movement of the affected hand; but, inversely, this does not take place. Sometimes, instead of a flexion of the hand, hyperextension or a redoubling of the choreic movements obtains. We know that synkinesis is habitual in hemiplegics. In certain invalids, in whom there are the disturbances of synergy and of coördination, the forced closing of the affected hand sometimes causes on the same side an elevation of the shoulder; which elevation is much greater than would be the effect on the opposite shoulder by forcibly closing the healthy hand. A simple movement is accompanied by trembling, or the movements may be non-continuous and recur many times at intervals.

What is noticeable in those affected is the impossibility of executing alternate movements in quick succession, since even the choreic movements do not suffice in themselves to make up the symptoms of the disease. The combined flexion of the thigh on the pelvis has also been noted. M. Babinski, who has mentioned this symptom in organic hemiplegia, has come across it twice in Sydenham's chorea.

The tendinous reflexes are rarely affected. In one patient the patellar and achillis reflexes were completely abolished on one side, but this was a case in transition between simple chorea and chorea mollis. Twice the observation has been made of a prolonged patellar reflex, after a blow on the patellar tendon, the knee remaining some seconds extended on the thigh. This phenomenon has already been observed by Weill, of Lyons, Gordon, Peacock, and Esner. These authors agree with Hutinel and Babonneix that "when the patellar reflex is studied, and when on percussion the leg is projected a certain distance, it will remain in a prolonged tonic contraction, then redescend slowly to the normal position."

The cutaneous reflexes may be altered. Four times there was observed Babinski's Sign; once Oppenheim's Sign, with Babinski's lacking. Babinski's Sign has been noticed once in Sydenham's chorea by M. Charpentier, and thrice in twenty-three cases by MM. Hutinel and Babonneix.

The examination of the cephalorachidian fluid following lumbar puncture, has many times been positive in showing a limited lymphocytosis. As a result of these facts, we can prove that in Sydenham's chorea there exist signs which belong to the symptomatology of the organic maladies of the central nervous system and, moreover, some of those, which, since the labors of M. Babinski, are considered as indicative beyond a doubt of a perturbation of the pyramidal fasciculus. Others on the contrary belong to the symptomatology of localized lesions of other anatomic systems than the cortical motor substance. These signs of an organic lesion are not always complete in all choreics; in some,

there are only two or three to be found; in others, Babinski's Sign is the only one present. Moreover in some cases they are completely absent, but even so, should we exclude the hypothesis of an organic lesion? Does not chorea, even when considered only as a symptom of an organic malady, possess the characteristics of so important a disturbance?

An examination of the facts shows that there definitely exist in choreics two sorts of kinetic disturbances: First, disordered movements, irregular without any apparent cause, and involuntary; these are the properly called choreic movements. They are much improved under the influence of repose, the best therapeutic measure at our command to combat chorea, and also under volition, since much is gained by insisting on the afflicted remaining tranquil; secondly, the clonico-tonic convulsions,—those which do not appear to be modified by repose or volition, but are in a measure instrumental in setting free the choreic movements.

What is the nature and what is the seat of the lesion in chorea, if it is an organic malady? The ensemble of the symptoms, their predominance on one side, and a certain degree of paresis, are things that indicate a lesion of the motor cortical zone. The coexistence of minor mental troubles, such as irritability, agitation, insomnia, inaptitude for work, lack of attention, makes one partial to the view that the cerebral cortex is involved. The infectious origin is the most probable cause; rheumatism, for instance, being quite a frequent source of infection. Basing his statements on clinical observations, M. André-Thomas concludes that Sydenham's chorea is not a neurosis but a symptom of encephalitis or meningo-encephalitis.

Here should be stated that all authorities do not admit this. For instance is chronic chorea, which is seen following a simple emotion, always an organic malady? Does its habitual curability class it with an anatomic lesion of the nervous center, and does it suffice to admit that this lesion is transitory? The future will teach us this, without doubt; but at present we are already in a position to admit that chronic chorea, known as Sydenham's, is not always a pure neurosis. The line of argument advanced by M. André-Thomas resolves itself into this,—that in a number of cases this affection is really of organic origin.

October 10.

EDITOR INTERSTATE MEDICAL JOURNAL:

I have read with great interest Dr. A. Housquains' Paris letter, in the August number of your excellent JOURNAL, concerning cantharides in the treatment of epithelial nephritis, as reported by Prof. Lancereaux. The writer of the letter leaves it to be inferred that this treatment is a new discovery by Prof. Lancereaux, a return to an idea originated and developed by him fifteen years ago.

In the interest of truth and to give credit where credit is due, I beg to call your readers' attention to the fact that this employment of cantharides is much older than the claimed discovery of Lancereaux's, is far older than the professor himself. For in 1805 was published in Leipsic Hahnemann's *fragmenta de viribus medicamentorum positivis, sive in sano corpore humano observatis*, as its full Latin title reads. This contained the partial pathogenesis of twenty-seven drugs, among which was cantharides, with 20 symptoms observed by Hahnemann and 74 by

others. In this "Fragmenta" were already recorded some of the symptoms which were to guide future students of homeopathy to the selection of cantharis for the treatment of inflammatory conditions of the genito-urinary organs, among them nephritis, a selection which could only be conceived for acute inflammations upon the determinate knowledge and with the posology of Homeopathy. Hahnemann did not, however, take the drug up again, and its fuller pathogenesis did not appear until Hartlaub and Trink published their *Arzneimittellehre* (Leipsic 1828-29-31), in which cantharis appears with 952 symptoms, to which Dr. T. F. Allen, of New York, later added symptoms drawn from experiments made by Giacomini on his pupils, and observations from many other sources, making a total of 1,651 symptoms in the present day homeopathic symptomatology of this drug, giving complete indications for its use in these conditions.

But already, before the appearance of the "Fragmenta," the employment of cantharis for chronic nephritis had been advocated by Groenvelt and Bartholin in the latter half of the 18th century, a suggestion which booted ill for the former, as he was put in Newgate at the instance of the London College for having had the temerity to advocate a so paradoxical and heterodox treatment, which proceeding, I opine, should make Prof. Lancereaux thank his stars that he lives in the more tolerant days of the 20th century. Among more modern authors the Frenchman is, however, by no means the first to advocate cantharides in epithelial nephritis. For besides the numerous Homeopathic authors, who have pointed out that, inasmuch as the renal symptoms of cantharis show that it acts on the secreting tubes rather than, as turpentine, on the Malpighian bodies, and therefore is inferior to the latter in simple suppression of the urine and in hæmaturia, it should be selected when desquamation predominates, as in post-scarlatinal nephritis. Ringer long ago strongly recommended it in this malady. He advocated it in doses of one minim of the tincture, "after the first symptoms have passed off," which latter observation he could have omitted, if he had been willing to take his dosage from the system of therapeutics where he probably found the indications for his drug. But it is noteworthy that neither Prof. Lancereaux, nor Ringer, or his confrere, Phillips, gives credit to Homeopathy for therapeutic practices advocated in their writings, practices which are evidently purloined from Homeopathic sources and which the merest tyro in Homeopathy knows as he knows his primer.

Should you find space for these lines in a future issue of your JOURNAL, it would be appreciated by

Yours very truly,

DR. A. E. JOHNSON.

St. Louis, August 10, 1909.

HISTORICAL NOTES.

GIUSEPPE RIBERA, 1588-1656.

It may be interesting to physicians to learn that theirs is not the only profession whose members have been guilty of petty meannesses, of acts of cruelty, and of downright injustice toward each other. The annals of art furnish numerous instances of the persecution of artist by artists, of sculptor by sculptors, of professor by rival professors. It is probable that such acts of injustice, inspired by professional jealousy, in no place have assumed a fiercer aspect than in Naples.

In the seventeenth century the Neapolitan school of art was dominated by a self-educated man of mean character and fierce disposition, who, while he tyrannized his pupils, did not hesitate to do bodily harm to his rivals. The fame of Caravaggio depended on his success in making Nature triumphant over Mannerism. Coarse and brutal as he was, he obtained a temporary reputation which was scarcely less extensive than that which was accorded to Raphael and Corregio. The pupils of Caravaggio, the Neapolitan banditti of art, followed in the footsteps of their master. They systematically persecuted all who were outside of their circle, and, while guiding the taste of the public, they did not scruple to commit murder in order to enforce their monopoly of art. Such men were Bellisario Corenzio, a Greek; Giambattista Caracciolo, a Neapolitan, and Giuseppe Ribera, known as Lo Spagnuolo, from his Spanish origin. The persecutions which these conspirators inflicted upon the illustrious Annibal Caracci, who had been called to Naples to adorn the Duomo of St. Januarius, caused this eminent painter to return to Rome, where he died heartbroken. His pupil Guido, and the venerable Arpino, saved their lives by flight. Ruggieri and Meini, who were left behind to finish the work, were enticed on board a galley in the bay of Naples and were seen no more. Domenichino, Italy's greatest historical painter, who was summoned in 1629 to finish the church decorations, had his life embittered by calumnies, criticisms, schemes and plots, and only the pledged word of honor of the Spanish Viceroy saved him from physical violence.

Brought to Naples at an early age by his father, Ribera in 1606 was placed in the school of Caravaggio. Rapidly gaining fame, he was loaded with honors and became the acknowledged leader of the Naples school of art. He and his associates formed a conspiracy of painters, whose object was to exclude from Naples all artists who did not worship at their shrine. It was but natural that such an untamed nature should produce frightful and hideous pictures. The softening influence of travel and of study under Roman, Tuscan and Bolognese masters was soon lost by Ribera, who returned to ruffianism and to horror.

Ribera's power lies in his knowledge of anatomy and in his ability to depict suffering. He delights in portraying the most excruciating pain, in painting torture, in drawing wrinkles, and in skinning his sub-



THE FLAYING OF SAINT BARTHOLOMEW.

(Etching by Ribera:)

jects alive. The colorless muscles of St. Jerome, the spasms and torture of Ixion, the quivering flesh of St. Bartholomew, and Cato of Utica tearing out his own entrails, are splendid examples of anatomical knowledge as applied to horrors of art. They are masterpieces of torture, made by the hand of an artist with the heart of an assassin.

In addition to his other works, Ribera made twenty-six etchings from his own paintings or designs. These are of great merit and include studies of the lower extremities, the hand, the eye, the ear, the face, etc. A striking figure is that of the head and neck of a patient who was afflicted with multiple fibromata. This is much less repulsive than the agonizing scene in which an aged man, who is bound to a tree, is being skinned alive by a murderous looking individual. This etching—*The Flaying of St. Bartholomew*—expresses more than the murder of a saint; it shows the ferocious spirit of Ribera, who not only etched this subject, but also painted it several times.

BOOK REVIEWS.

STUDIES OF THE HUMAN FORM. FOR ARTISTS, SCULPTORS AND SCIENTISTS. By R. W. Shufeldt, M. D., Major and Surgeon, United States Army (Retired). Published by F. A. Davis Company, Philadelphia.

Inspection, palpation, percussion and auscultation are the successive steps of a proper physical examination. It is to be deplored that very often, entirely too often, the very important first step of this procedure either is omitted or is made in such a superficial manner that its practical value becomes *nil*. It can not be denied that the well trained eye will readily recognize even slight deviations of form and contour, and such recognition must be of importance in the diagnosis of an existing pathologic condition. The chief value of a book like the one before us for the physician lies in the fact that it offers him an opportunity to familiarize himself with the appearance and shape of every part of the body while in a state of perfect health.

The text of Shufeldt's work, when compared with the many similar works published by Straaz, with much more detail, deals with points of special interest to the artist, but offers so much valuable information concerning the medical aspect of the problem, that we feel justified in calling here attention to the appearance of these Studies of the Human Form. This Imperial Octavo volume of nearly 700 pages, containing 428 excellent illustrations and a large number of other artistic cuts, will afford interesting and instructive reading to every physician during hours of leisure.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Pediatrics, Obstetrics, etc. Philadelphia and London: J. B. Lippincott Company. Volume I., Nineteenth Series, 1909.

The contents of this first volume of the 19th series includes such articles as the following: The Hospital for Advanced Cases of Tuberculosis, Flick; Occupations and So-called Rheumatic Pains, Walsh; Mikulicz's Disease and Allied Conditions, Howard; Acute Tubercular Rheumatism, Lericke; Diag. of Gastric Dilatation, Sommerville; Typhobacillosis, Landouzy; Nerve Grafting in Facial Paralysis, Freeman; Suppuration in Appendicitis, Corner; Excision of the Hip-joint in Arth. Deformans, Richardson; Conditions Modifying Operative Work, Moth; A Case of Acute Yellow Atrophy of the Liver and Pernicious Vomiting of Pregnancy, Jardine; Intestinal Obstruction During Pregnancy and the Post-partum, Cumston.

INTERNATIONAL CLINICS. Philadelphia and London: J. B. Lippincott Company. Volume II., Nineteenth Series. 1909.

Contents: Immunization Against Typhoid Fever, Shoemaker; Mineral Waters in the Treatment of Syphilis, Carriere; Diagnosis and Treatment of Pneumonia in Children, Fischer; Psychasthenia, Loveland; Tuberculous Serofibrinous Pleurisy and Its Treatment, Allyn; Some Remarks on Hyperchlorhydria, Niles; Cong. Familial Splenomegaly with Chronic Acholuric Jaundice, Weber; Diabetes, Wells; Cong. Idiopathic Dilatation of the Colon, Danial; Surgical Pneumothorax as a Treatment for Phthisis, Dumarest; The Present Status of the Cammidge Reaction, Goodman; The Treatment of Abscess in Hip Disease, Schwatt.

INTERNATIONAL CLINICS. Philadelphia and London: J. B. Lippincott Company. Volume III., Eighteenth Series. 1908.

This volume contains many valuable papers by eminent authorities and maintains the high standard of previous issues. Among the subjects considered are:

Sciatica, Its Nature and Treatment, Duckworth; The Treatment of Pertussis of Fluoroform, Tissier; Two Cases of Tetanus Treated with Cholesterin with Recovery, Almaga; Perforation of the Intestine in Typhoid Fever, Scott; On the Value of Oesophagoscopy from the Point of Diagnosis and Therapeusis,

Guisez; Considerations as to the Nature of Hysteria with Their Application to the Treatment of a Case, Williams; The Cytological Examination of a Case Diagnosed Clinically Malignant Disease of the Liver and the Spleen, Swan; Melanotic Neoplasms, Gibbon; The Modern Treatment of Fractures by Means of Direct Internal Splintage, Corner; Adenoma of the Thyroid Gland, Muller; Pericolie Inflammation, Clogg.

INTERNATIONAL CLINICS. Philadelphia and London: J. B. Lippincott Company. Volume IV., Eighteenth Series, 1908.

Among the subjects presented in this volume by well-known authors are the following:

The Advance of Physical Therapeutics, Pratt; The Treatment of Gastric Ulcer Based Upon the Results of One Hundred and Forty Cases, Lichty; Psychotherapeutics, with Special Reference to the Influence of the Mind Upon the Body, Palmer; A Brief Study of Gout, Including Treatment, Wainwright; Splanchnoptosis-Enteroptosis—Glenard's Disease, Brown; A Case of Primary Splenomegaly (Splenic Anæmia) with Remarks on the Various Causes of Chronic Enlargement of the Spleen in Adults, Weber; Gangrenous Appendicitis with Spontaneous Cure Due to Discharge Through Intestine.

ATLAS AND TEXT-BOOK OF HUMAN ANATOMY. By Dr. Johannes Sobotta. Volume III. Vascular System, Lymphatic System, Nervous System and Sense Organs, with 297 illustrations, mostly in colors. Philadelphia and London: W. B. Saunders Company.

This is the last volume of Sobotta's excellent Atlas and covers the vascular system and the entire nervous system together with the organs of special sense. The same high character of illustrations and descriptive text is carried out as appeared in the two previous volumes.

SPRAINS AND ALLIED INJURIES OF JOINTS. By R. H. Anglin Whitelocke, M.D., M.C. (Edin.), F.R.C.S. (Eng.) London: Henry Frowde, Oxford University Press, 1909.

This book comprises chiefly the writer's personal experiences and is a very helpful work for every practitioner in treating sprains, strains and joint injuries. It is incumbent upon every practitioner to be able not only to treat these affections successfully but to give sound and reliable prognoses. The author does not claim to put in the 230 pages all that is known on this subject; his intention is rather to supply certain details, operative and otherwise, which are not found in the ordinary text-book on surgery. Of special note is the chapter on sprains in the region of the knee joint.

OXFORD MEDICAL PUBLICATIONS. GRAPHIC METHODS IN HEART DISEASE. By John Hay, M.D., M.R.C.P., with an Introduction by James Mackenzie, M.D., M.R.C.P. London: Henry Frowde; Hodder & Stoughton. 1909.

Graphic methods of investigating the disorders and diseases of the heart have opened up numerous avenues of research and it is now generally recognized that valuable information is obtained by such means, concerning diagnosis, prognosis and treatment. The ordinary sphygmographic tracings of the radial pulse have but slight value. That correct deductions concerning cardiac abnormalities may be drawn, it is necessary to take simultaneous tracings such as those of jugular and radial pulse. In this way, information may be obtained concerning the activity of the auricle, the ventricle and the auriculo-ventricular bundle. A variety of apparatus is available for this purpose but the most convenient for clinical use seems to be a modification of Dudgeon's sphygmograph. In this, besides the ordinary apparatus, there is a time marker and an attachment for an arm bearing a tambour which may be used for simultaneous records of the jugular, epigastric, hepatic or apical pulse. In Hay's book a full description of the various abnormalities of cardiac rhythm as interpreted by graphic methods will be found. It is profusely illustrated by means of characteristic tracings, not the least valuable element in the book. It forms a useful introduction to this fascinating field of clinical research.

OXFORD MEDICAL PUBLICATIONS. MEDICAL INSPECTION OF SCHOOLS. By A. H. Hogarth, M.B., B.Ch., Oxon., D.P.H. London: Henry Frowde; Hodder & Stoughton. 1909.

The problems connected with medical inspection of schools are somewhat different in England than in this country. The great bulk of the population of the large cities there are much poorer and very much more ignorant than with us. The educational system, too, differs from ours in many respects. The data

and the conclusions contained in Hogarth's book therefore have no direct bearing upon our own conditions but will nevertheless be of importance to all who are interested in educational hygiene. The writer differs from most of his predecessors in minimizing the importance of the early detection of contagious diseases on the part of the school inspectors, believing, as he does, that contagion is spread more effectively outside of the schools than in. The value of inspection, to him, lies chiefly in the detection of unrecognized but remedial physical defects and in the segregation of those who are mentally unfit to keep step with their mates in the school routine. A bibliography and a good index add greatly to the value of the book.

ATLAS DER KLINISCHEN MIKROSKOPIE DES BLUTES. Zweite Auflage bearbeitet von Privatdozent Dr. E. Meyer und Professor Dr. H. Rieder in München (unter Mitwirkung von Dr. G. Maurer, München). Leipzig: Verlag von F. C. W. Vogel. 1907.

This magnificent series of plates is truly a triumph of lithography. In it human blood, as seen under the microscope, is portrayed both normal and pathologic, stained and unstained, so true to nature that one may almost believe one sees the preparations themselves. The plates illustrative of the three kinds of malaria are especially beautiful and instructive. The remarks regarding technique contain many a practical hint, such as the advice to mount the cover glass blood side upwards, if a permanent preparation is desired. Only so can the decolorizing action of Canada Balsam be avoided. Every teacher or amateur of hematology will be glad to possess the volume.

LE CANCER. Dr. E. Doyen. Paris: Librairie Universelle and Librairie A. Maloine. 1909.

In 1886 Dr. Doyen deposited with the Academy of Sciences a sealed communication which, when opened in 1904, was found to contain an account of certain granules present in the expressed juice of various malignant tumors. They are spherical, vary in size from 1 to 6 micra, are motile and stain with difficulty. After many failures, Doyen succeeded in growing a microorganism, which he considered identical with these granules, in a medium made out of cows' udders and in transplanting them later upon a variety of culture media. As he obtained this bacterium from some 90 per cent. of all rapidly growing tumors, he considered it to be the microorganism responsible for their occurrence and named it the *micrococcus neoformans*. This announcement was met by a storm of denial and ridicule, which was not allayed when he went further and reported a number of inoperable cancers cured by means of vaccination with his micrococcus. The general attitude towards Doyen's discovery has been one of persistent skepticism. Those who are interested in Doyen's side of the controversy will find it set down here, clearly and in detail if somewhat polemically. The personalities lend a touch of gayety to the book and one is not surprised to find his most energetic adversaries branded as absolutely ignorant of the elements of bacteriology.

TASCHENBUCH DER THERAPIE MIT BESONDERER BERÜCKSICHTIGUNG DER THERAPIE AN DEN BERLINER, WIENER U. A. DEUTSCHEN KLINIKEN. Herausg. von Dr. M. T. Schnirer. Fünfte vermehrte und verbesserte Ausgabe. Würzburg: A. Stuber's Verlag (C. Kabitzsch). 1909.

As its title indicates this booklet, readily carried in the pocket, is a compendium of the best German therapeutic practice.

A POCKET FORMULARY. By E. Quin Thornton, M. D. Ninth Edition, Revised. Lea & Febiger, Philadelphia and New York. n. d.

Thornton's Pocket Medical Formulary, one of the best of its kind, is too well known to require much description. Arranged alphabetically according to diseases, a vast mass of prescriptions are here accessible. The compiler is conservative in his tendencies and his book presents the old tried remedies rather than the newest medicinal suggestions.

ETUDES ANATOMO-CLINIQUES, COEUR-VAISSEAUX-POUMONS. Par Le Dr. Raymond Tripiet, Avec. 32 figures dans le texte. Paris: G. Steinheil, Editeur. 1909.

The striking characteristics of Prof. Tripiet's book is the fact that, throughout, his clinical and therapeutic observations have been based upon an extensive pathologic foundation. The various chapters, each a monograph in itself, discuss respectively endocarditis, syphilitic aortitis, mitral atheroma, arterio-sclerosis, pleuritic adhesions, reciprocal relations between cardiac and pulmonary affections, initial lesions of pulmonary tuberculosis and the like. Each chapter

takes up in detail the pathologic anatomy of the organ under discussion, proceeding then to a briefer account of symptomatology, diagnosis and treatment. The whole is cast in the somewhat rigid, systematic mould characteristic of French medical writing, rarely enlivened by a narration of concrete cases. While somewhat stiff reading, it is full of meat and will well repay study.

CLINICAL TREATISES ON THE SYMPTOMATOLOGY AND DIAGNOSIS OF DISORDERS OF RESPIRATION AND CIRCULATION. By Prof. Edmund von Neusser, M. D. Authorized English Translation, by Andrew McFarlane, M. D. Part III., Angina Pectoris. New York: E. B. Treat & Co. 1909. Price, \$1.00.

In a brief monograph of 71 pages, Prof. von Neusser treats the subject of angina pectoris. Drawing from his vast fund of clinical experience he is able to illustrate his views by means of a wealth of interesting cases, most of them drawn from the second medical clinic of Vienna, of which he is chief. The etiology, pathology, symptomatology, diagnosis, etc., are discussed in great detail but, of the 71 pages, a scant 2 are devoted to treatment. And indeed in the face of true angina pectoris we are well-nigh helpless. A hope for the eventual production of a real causal therapy for this disease lies, he believes, in the future discovery of an antibody for the product of the adrenals, perhaps by means of the subcutaneous implantation of fragments of adrenal tissue. Symptomatically the nitrites and the theobromine preparations may be of use and quinine in small doses is serviceable to an extent not generally appreciated. Digitalis is often dangerous in angina pectoris on account of its vaso-constrictor action and the same applies to morphine. The absence of an index is a fault even in so small a volume.

DIAGNOSTIC METHODS, CHEMICAL, BACTERIOLOGICAL AND MICROSCOPICAL. A Text-book for Students and Practitioners. By Ralph W. Webster, M.D., Ph.D., with 37 Colored Plates and 164 other Illustrations. Philadelphia: P. Blakiston's Son & Co. 1909. Price, \$6.00, net.

Clinical chemistry and microscopy advances with such rapid strides that each year a new text-book is needed to keep up with the increase in our knowledge. Webster's book is good of its kind. While less suited than some others for undergraduate instruction, it is so compendious that it will be found most useful as a book of reference by the laboratory worker. Any great originality is out of place in a compend of this kind. A book like this, clearly written, concise and yet entirely adequate in its description of methods, exercising careful selection and yet including everything of value, well fulfills its function.

NAHRUNGSMITTEL-TABELLE ZUR AUFSTELLUNG UND BERECHNUNG VON DIÄTVERORDNUNGEN FÜR KRANKENHAUS UND PRAXIS. Von Dr. Hermann Schall und Dr. August Heisler. Mk. 1.90. Würzburg: Curt Kabitzsch (A. Stuber's Verlag). 1909.

In conveniently indexed, tabulated form the authors present a complete list of all the usual articles of diet, with their constitution as regards proteids, carbohydrates, fat, salt, purin bodies, water and calories. In addition there is a description of the various mineral waters, an account of the changes undergone by foods in the course of their preparation for the table, a review of their cellulose and mineral contents and a tabulation of their digestibility. A final series of tables concerns itself with the digestibility of various foods, the requirements of various individuals and other miscellaneous matters. Anyone interested in accurate dietetics will find the little volume valuable.

LEHRBUCH DER SPEZIFISCHEN DIAGNOSTIK UND THERAPIE DER TUBERKULOSE. Für Aerzte und Studierende. Von Dr. Bandelier und Dr. Roepke. 3 erweiterte und verbesserte Auflage. Mit einem Vorwort von Wirke. Geh. Rat. Prof. Dr. R. Koch, Exzellenz. Wuerzburg: Curt Kabitzsch (A. Stuber's Verlag). 1909.

The fact that within less than two years, three editions of Bandelier and Roepke's book have been called for, speaks not only for the rapid development of our knowledge of the diagnostic and therapeutic utilization of tuberculin but also for the excellence of the text-book under consideration. Within a brief compass, the authors cover adequately the entire field of the use of tuberculin. In common with most observers, while they concede the utility of many varieties of tuberculin, they conclude that Koch's old tuberculin still fulfills all requirements. The cutaneous method of von Pirquet, they consider a coarse one, rarely practically useful in adults but invaluable in small children. The conjunctival method offers no advantages since neither if positive nor if nega-

tive does it justify definite conclusions. The other methods, such as the intracutaneous, the endormatic and the like offer no practical advantages. The most trustworthy diagnostic method, in spite of its incidental drawbacks, is still the hypodermatic administration of tuberculin, which should be done according to Koch's original formula. None of the methods have any prognostic value.

As regards tuberculin therapy, they are enthusiastic advocates in selected cases. In common with other German clinicians, they advocate higher initial doses than are commonly used in this country. Instead of beginning with our extremely great dilutions, they administer a tenth of a milligram at once and increase rapidly to one thousand milligrams. Even so, they rarely meet with serious reactions. The book is indispensable to any one who makes considerable use of tuberculin.

ESSENTIALS OF LABORATORY DIAGNOSIS, DESIGNED FOR STUDENTS AND PRACTITIONERS.

By Francis Ashley Faught, M. D. Containing an Indian Scale in Colors. Six Full Page Plates and Numerous Engravings in the Text. Philadelphia: F. A. Davis, Co. 1909.

This compendium, while a good example of its class, does not differ sufficiently from its predecessors to require extended notice.

DIE SCHÖNHEITSPFLEGE. FÜR AERZTE UND GEBILDETE LAIEN. Dargestellt von Dr. Orłowski. Zweite Auflage mit 25 Abbildungen im Text. Würzburg: Curt Kabitzsch (A. Stuber's Verlag). 1909.

In condensed form, the writer gives clear and detailed instruction in regard to various cosmetic procedures. The treatment of acne, hyperhydrosis, freckles, dandruff and the like is taken up in turn. The care of the skin, of the nails, the hair, the technique of facial massage, etc., follows. This is a field too much neglected by the general practitioner, who will find the book of very definite value. The matter of massage is taken up with special care and is well illustrated by means of photogravures.

WÜRZBURGER ABHANDLUNGEN AUS DEM GESAMTGEBIET DER PRAKTISCHEN MEDIZIN.

Herausgegeben von Prof. Dr. Joh. Müller und Prof. Dr. Otto Seifert. Die Hygiene des Ohres. Von Dr. Paul Maas. Würzburg: Curt Kabitzsch (A. Stuber's Verlag). 1909. Price, Mk. 0.85.

A brief presentation, for the general practitioner, of aural hygiene, the prophylaxis and the simpler ways of managing aural affections.

DR. JESSNER'S DERMATOLOGISCHE VORTÄGE FÜR PRAKTIKER. Heft 21. Hauttuberkulose (Lupus vulgaris, etc.) einschliesslich Tuberkulide und Lupus Erythematoses. Von Dr. S. Jessner. Würzburg: Curt Kabitzsch (A. Steuber's Verlag). 1909. Price, Mk. 1.30.

The general practitioner will find a clear and concise presentation of the subject of cutaneous tuberculosis in this number of Dr. Jessner's series of dermatologic monographs. Therapeutically the chief stress is laid throughout upon local measures. It is rather surprising to find him, at this day, expressing himself so skeptically regarding the diagnostic value of tuberculin and hardly more hopefully in respect to its therapeutic use.

WÜRZBURGER ABHANDLUNGEN AUS DEM GESAMTGEBIET DER PRAKTISCHEN MEDIZIN.

Herausgegeben von Prof. Dr. Joh. Müller und Prof. Dr. Otto Seifert. IX. Band. 10 Heft. Grundzüge der modernen Behandlung und Bekämpfung des Abdominaltyphus. Von Privatdozent Dr. Hermann Lüdke. Würzburg: Curt Kabitzsch (A. Stuber's Verlag). 1909. Price, Mk. 0.85.

This is a brief summary of the present standpoint regarding the treatment and prevention of typhoid fever. Therapeutically there is ground for the hope that a true curative serum will soon be forthcoming. The rigidly restricted diet is illogical; plentiful feeding is imperative. Purgatives and intestinal antiseptics are useless if not harmful while urinary antiseptics have their place. Hydrotherapeutics are indicated but it must be remembered that the high temperatures of this disease are probably not an unmixed evil since they encourage the production of antibodies. Prophylactically, typhoid vaccination promises much. The most certain method of lessening typhoid morbidity consists, however, in the prompt detection and isolation of the so-called "typhoid carriers."